Coeur d'Alene Tribe
Fish, Water, and Wildlife Program

Supplementation Feasibility Report
on the
Coeur d'Alene Indian Reservation

Coeur d'Alene Tribe Department of Natural Resources
Fish, Water, and Wildlife Program
850 A Street, P.O. Box 408
Plummer, ID 83851-0408

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Prepared By

Ron Peters
Angelo J. Vitale
and
Kelly Lillengreen
Program Manager

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Coeur d'Alene Tribe Department of Natural Resources
Fish, Water, and Wildlife Program
850 A Street, P.O. Box 408
Plummer, ID 83851-0408

PHONE: (208) 686-5302
FAX: (208) 686-3021

Table of Contents

Appendix C. Cohort analysis of growth for cutthroat trout and brook trout, 1996-1997.

List of Tables

List of tables continued-

List of Figures

Abstract

This study was initiated to respond to concerns regarding recent declines in native salmonid fish populations, particularly westslope cutthroat trout (*Oncorhynchus clarki*) and bull trout (*Salvelinus confluentus*), in the Coeur d'Alene basin. These declines are a result of anthropogenic disturbances that include construction of Post Falls Dam, major alterations in land cover types, changing land use patterns, and introduction of exotic fish species. This report 1) examines the effects of lake and stream habitat, species interactions and water quality on cutthroat trout population dynamics; 2) provides population estimates for westslope cutthroat trout in target tributaries; 3) defines supplementation and evaluates the role that supplementation may play in rebuilding cutthroat trout stocks on the reservation; and 4) develops the framework for constructing a hatchery and implementing a supplementation program.

Water quality in Coeur d'Alene Lake has a detrimental effect on habitat suitability for cutthroat trout. Temperatures recorded in the upper 10 meters of the water column are generally outside of the optimal range for rearing. Furthermore, the euphotic zone rarely drops below 10 meters so foraging runs require fish to enter areas with potentially stressful conditions. Indirect effects related to low dissolved oxygen concentrations, total suspended solids, and large masses of aquatic macrophytes effectively limit the cutthroat trout population in the areas where these conditions exist. Specifically, these areas include the littoral zones less than 10 meters deep, which are most affected by construction of Post Falls Dam.

Competition occurs between cutthroat trout and other fish species in the lake. The introduction of non-native species has altered the historic behavioral pattern of cutthroat trout in both the littoral and limnetic zones. Introduced species comprised over 68 percent of the catch in relative abundance studies from 1994-1997 while cutthroat trout comprised less than 1 percent of the catch. Five introduced species have been demonstrated to actively feed on other fish species, including adult and juvenile cutthroat trout. Historically, bull trout and northern squawfish were the only predators of cutthroat trout in the lake.

The availability of summer rearing habitat for cutthroat trout is a primary constraint on tributary populations. The range of suitable summer rearing habitat in each of the target watershed is significantly reduced when compared with the historic range of the fish. Population estimates have consistently shown that abundance of juvenile cutthroat trout is greatest in first and second order tributaries, where water quality conditions are most favorable. Typical base flow conditions, however, force juvenile trout into small pools where competition for space and food may occur. Furthermore, displacement into water quality limited reaches may be a significant source of mortality. Application of habitat suitability indices indicates that improving habitat condition through restoration and protection has the potential to partially compensate for short-term degradation in water quality.

Due to the persistence of adverse conditions in natal streams and Coeur d'Alene Lake, cutthroat trout populations are thought to be at least moderately damaged. Based on the analysis of limiting factors, gains from habitat restoration and protection alone will not achieve the goals set forth by the Coeur d'Alene Tribal Council to provide for self-sustaining populations and harvestable numbers of cutthroat trout. Supplementation is proposed as an additional means to boost the population density above a certain minimum viable population size. The minimum viable spawning escapement size and the minimum effective breeding number are values that are currently under investigation and will need to be refined to develop an initial management strategy. The most effective management strategy would employ a supplementation program to a level that minimizes the risk of extirpation.

1.0 Introduction

Recent declines in native salmonid fish populations, particularly westslope cutthroat trout (*Oncorhynchus clarki*) and bull trout (*Salvelinus confluentus*), in the Coeur d' Alene basin have been the focus of study by the Coeur d' Alene Fish, Water, and Wildlife program since 1990. In fact, early studies on Coeur d'Alene Lake showed that significant declines had occurred as early as 1932. It appears that there are a number of factors that contributed to the decline of resident fish stocks within Coeur d'Alene Lake and its tributaries (Ellis 1932; Oien 1957; Mallet 1969; Scholz et. al. 1985, Lillengreen et. al. 1993). These factors include: construction of Post Falls Dam in 1906; major changes in land cover types from primarily forested areas to forests with recent and recovering clearcuts, agricultural and pasture lands, urban development, mining and open range land; and introduction of exotic fish species.

Over 100 years of mining activities in the Silver Valley have had devastating effects on the quality of the water in the Coeur d'Alene River drainage and Coeur d'Alene Lake. Effluent from tailings and mining waste have contributed vast quantities of trace heavy metals to the system. Poor agricultural and forest practices have also contributed to the degradation of water quality and habitat suitability for resident salmonids. Increased sediment loads from agricultural runoff and recent and recovering clearcuts, and increases in water temperature due to riparian canopy removal may be two of the most important problems currently affecting westslope cutthroat trout. Increases in water temperature have reduced the range of resident salmonids to a fraction of its historic extent. Within this new range, sediment has reduced the quality of both spawning and rearing habitats. Historically, municipal waste contributed large quantities of phosphates and nitrogen that accelerated the eutrophication process in Coeur d'Alene Lake. However, over the last 25 years work has been completed to reduce the annual load of these materials. Wastewater treatment facilities have been established near all major municipalities in and around the basin.

Species interactions with introduced exotics as well as native species are also acting to limit cutthroat trout populations. Two mechanisms are at work: interspecific competition, and species replacement. Competition occurs when two species utilize common resources, the supply of which is short; or if the resources are not in short supply, they harm each other in the process of seeking these resources. Replacement occurs when some environmental or anthropogenic change (e.g., habitat degradation, fishing pressure, etc.) causes the decline or elimination of one species and another species, either native or introduced, fills the void left by the other.

Within their historic range, cutthroat trout evolved with few other fish species. Thus, they developed as “generalists” and are more susceptible to interspecific interactions than other fish which evolved in the presence of multiple species (Griffith, 1988). In the Coeur d’Alene basin, it is most likely that environmental conditions, rather than competition through interspecific interactions, shaped cutthroat trout behavior and morphology. Rapid changing environmental conditions in the Coeur d’Alene Basin has allowed introduced exotics, and native species other than cutthroat trout to proliferate. This has been shown to be true in the Columbia River system where dam construction has altered the fish species composition and allowed northern squawfish (*Ptychocheilus oregonensis* Richardson) to effectively reduce the numbers of juvenile salmon migrating downstream (Beamesderfer and Rieman 1991).

There are twenty-one identified species of fish inhabiting the Coeur d'Alene Lake study area, of which only seven are indigenous species. The indigenous species are cutthroat trout, bull trout, northern squawfish, largescale sucker (*Catostomus macrocheilus* Girard), longnose sucker (*Catostomus catostomus* Forster), mountain whitefish (*Prosopium williamsoni* Girard), and sculpin (*Cottus* sp.). The introduced exotic species include yellow perch (*Perca flavescens* Mitchill), pumpkinseed (*Lepomis gibbosus* Rafinesque), largemouth bass (*Micropterus salmoides* Lacepede), black crappie (*Pomoxis nigromaculatus* Lesuerur), brown bullhead (*Ictalurus neblosus* Lesuerur), black bullhead (*Ictalurus melas* Rafinesque), channel catfish (*Ictalurus punctatus* Rafinesque), tench (*Tinca tinca* Linnaeus), northern pike (*Esox lucius* Linnaeus), kokanee salmon (*Oncorhynchus nerka* Walbaum), chinook salmon (*Oncorhynchus tshawytscha* Walbaum), smallmouth bass (*Micropterus dolomieui* Lacepede), rainbow trout (*Oncorhynchus mykiss*), and lake superior whitefish (*Coregonis clupeaformis* Mitchell). The Idaho Department of Fish and Game has been stocking and/or managing for exotic species in Coeur d'Alene Lake for over 50 years, most notably kokanee salmon (1937), chinook salmon (1982), and northern pike (unknown). Other studies have indicated that most of these species can competitively exclude or replace cutthroat trout in both stream and lake environments (Griffith, 1972, 1974, 1988; Moyle and Vondracek, 1985; and Marnell, 1986, 1987, 1988).

Westslope cutthroat trout and bull trout exhibit three primary life history forms: adfluvial, fluvial, and resident. Of these forms, adfluvial production is considered the most important in the Coeur d' Alene basin. The reasons for this are that they attain the largest size and played an important role in the subsistence economy of the Coeur d'Alene Tribe. Adfluvial salmonids move through many different habitats during their life history, thus production is governed by a wide variety of physical, chemical, and biological influences. In particular, they differ from fluvial and resident forms in that they are dependent on both the tributary and lake environments for completion of their life cycle. Because of this dependency on multiple habitats, they are more sensitive to widespread changes in habitat quality and complexity than the fluvial and resident forms. Furthermore, the maximum potential for interaction with introduced exotic species is realized in the adfluvial life history strategies of the westslope cutthroat trout and bull trout. During the course of their lifecycle, they interact with all other species either through predation by other piscivorous fishes or through competition for living space and food.

Work conducted by the Coeur d'Alene Tribe Fish, Water and Wildlife Program has helped determine that habitat components utilized in each of the three critical life history phases, as well as interactions with introduced species, potentially limit production of adfluvial fishes. These components include spawning habitat and juvenile rearing habitat in tributary streams, and adult rearing habitat in the lake. In order to effectively increase populations of westslope cutthroat trout, habitat restoration must take place in natal streams. However, restoration of the critical tributary habitat does not guarantee increases in adfluvial trout production because adfluvial westslope cutthroat trout reside in Coeur d'Alene Lake for two-thirds of their life cycle. Evidence suggests that production of cutthroat trout is indirectly limited by lake habitat features, but the extent of this limitation is not fully understood.

It is the intent of the Coeur d'Alene Tribe Fish, Water and Wildlife program to increase native populations of bull trout and cutthroat trout to sustainable and harvestable levels. This will be achieved through restoration of critical tributary habitat and management of limiting factors in the lake. This report will examine, in as much detail as possible, the specific abiotic and biotic factors affecting the cutthroat trout population in Coeur d'Alene Lake and its tributaries. Options will be provided for the effective restoration of adfluvial cutthroat trout populations which will best serve the Coeur d' Alene Tribe's goal of self-sustaining and harvestable stocks of bull trout and westslope cutthroat trout.

In order to determine what steps are necessary to rebuild existing trout populations to self-sustaining and harvestable levels on the Coeur d'Alene Reservation, the following goals and objectives have been identified:

- Determine the effect lake habitat, species interactions, and water quality have on cutthroat trout populations.
- Evaluate the effects of habitat, water quality and interspecific interactions on cutthroat trout population dynamics in target watersheds.
- Provide population estimates of westslope cutthroat trout in target watersheds.
- Define supplementation and evaluate the role that supplementation may play in rebuilding cutthroat trout stocks in target watershed on the Coeur d'Alene Indian Reservation.
- Develop the framework for constructing a hatchery and implementing a supplementation program.

These objectives are designed to facilitate the decision making process regarding the need and/or feasibility of supplementing the adfluvial cutthroat trout population in Coeur d'Alene Lake.

1.1 Study Area

Coeur d'Alene Lake

Coeur d'Alene Lake is the second largest lake in Idaho and is located in the panhandle section of northern Idaho. Population centers are located in the Northern most shoreline of Coeur d'Alene Lake (Coeur d'Alene) and at the mouth of the Coeur d'Alene River (Harrison). The lake is located in two Idaho counties: Kootenai and Benewah. The city of Coeur d'Alene is the largest in Kootenai County and Harrison is the second largest in Benewah County. The largest town in Benewah County (St. Maries) lies about 19 kilometers upstream of Coeur d'Alene Lake on the St. Joe River.

Coeur d'Alene Lake is within the 17,300 square kilometer Spokane River drainage basin. The lake lies in a naturally dammed river valley with the outflow currently controlled by Post Falls Dam. Post Falls Dam controls the level of the lake from the dam to the town of St. Maries on the St. Joe River. At full pool (lake elevation 648.7 meters) the lake covers 129 square kilometers and at minimum pool level (lake elevation of 646.2 meters) the lake covers 122 square kilometers with a mean depth of 22 meters and a maximum depth of 63.7 meters. The lake is 42 kilometers long and anywhere from 1.6 to 9 kilometers wide. Morphometric data was taken from Woods and Berenbrock (1994).

Many tributaries feed the lake. The two main tributaries of Coeur d'Alene Lake, Coeur d'Alene and St. Joe Rivers, drain the Coeur d'Alene and St. Joe Mountains. These mountains are composed of primarily metasedimentary rocks of the belt group with local intrusions of granitics. Lower elevations are composed primarily of glaciofluvial deposits. The southern end of Coeur d'Alene Lake is made up of four shallow lakes (Hidden, Round, Chatcolet, and Benewah) flooded as a result of construction of Post Falls Dam.

The regional climate is subhumid temperate with cool, wet winters and warm, dry summers. The lake receives about 64.5 centimeters of precipitation annually with more in the higher elevations around the lake (97.2 centimeters Wallace, ID). A distinct precipitation season typically begins in October or November and continues through April or May. Approximately two-thirds of annual precipitation occurs during this period. The average daily maximum temperature in July is 30° C, the average daily minimum in January is –5° C. Moist, Pacific air masses that enter the area in late winter and early spring often generate rain-on-snow events. Geological data was taken from U.S. Department of Agriculture (1984).

Target Tributaries
Four target tributaries, including Alder, Evans, Benewah, and Lake Creeks have been identified and described in previous reports (Lillengreen 1993; Lillengreen, et. al. 1996; Kootenai-Shoshone Soil Conservation District 1991; Krueger 1998). Basin morphometrics were derived from the Tribal GIS database following the definitions of Gardiner (1990), and are given in Table 1.1

Table 1.1 Basin morphometry of the Lake Creek, Benewah Creek, Alder Creek and Evans Creek watersheds.

Characteristic	Lake Creek	Benewah Creek	Alder Creek	Evans Creek
Basin Area	93 km^2 (23,117 ac.)	152 km^2 (37,447 ac.)	69 km^2 (17,047 ac.)	34 km^2 (8,512 ac)
Basin Length	16.2 km	22.2 km.	20.2 km.	10.4 km.
Basin Relief	938 m	772 m	820 m	999 m
Basin Perimeter	55.2 km	82.3 km	43.2 km	27.8 km
Relief Ratio	0.057	0.034	0.040	0.095
Channel Length*	152.8 km	219.6 km	110.0 km	46.6 km
Drainage Density	1.64 km/km^2	1.44 km/km^2	1.59 km/km^2	1.37 km/km^2

*Includes intermittent tributaries.

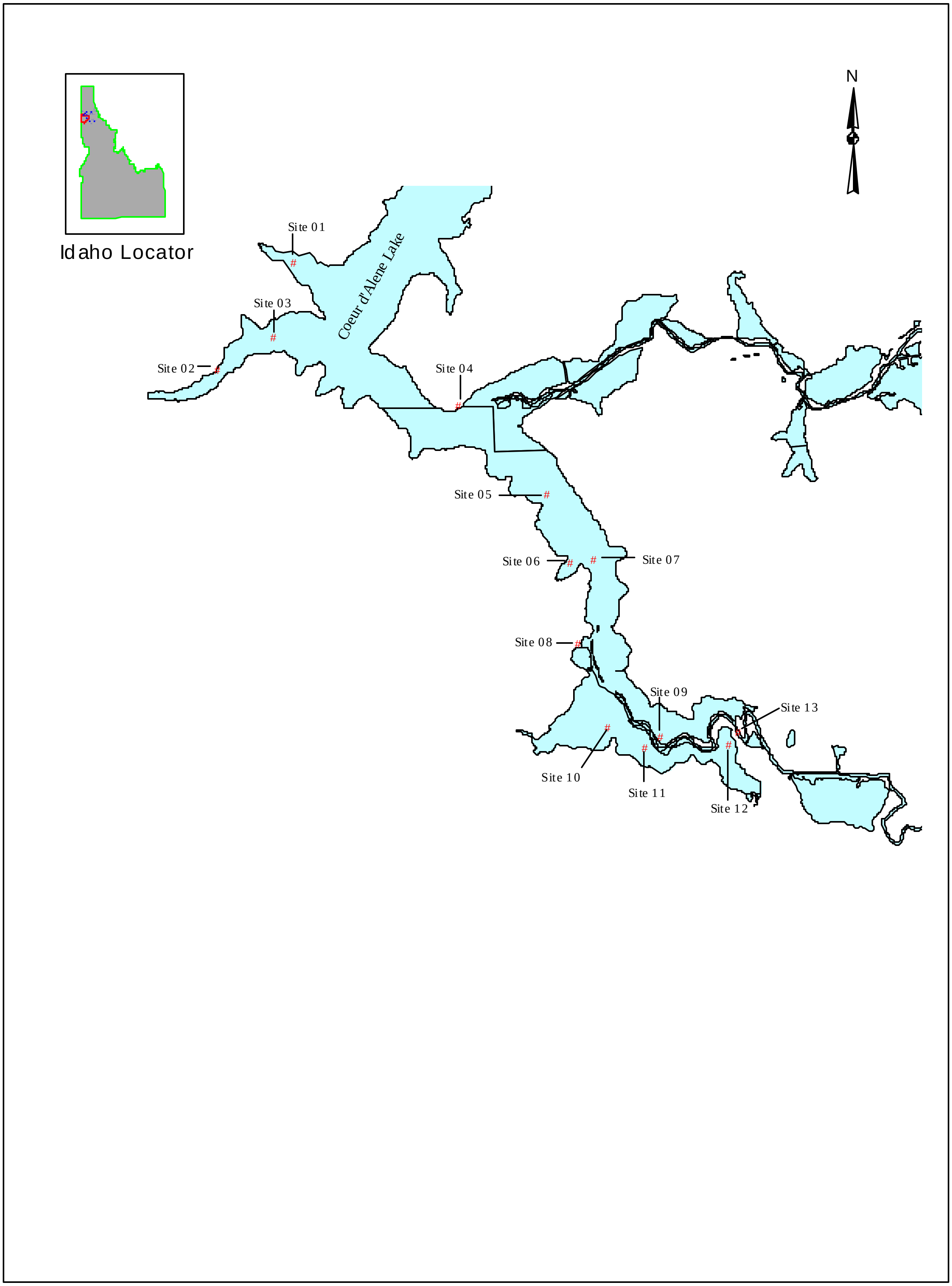
2.0 Materials and Methods

2.1 Lake Studies

2.1.1 Water Quality
Coeur d'Alene Lake is a multi-basin lake with variable water quality conditions. Lake level fluctuations and water retention times in the various sub-basins cause water quality to change during the course of the year and from year to year. This compounds the problem associated with development of a lake wide management strategy because an observed problem may not be recognized in successive years. An appropriate monitoring strategy must account for these fluctuations. The Coeur d'Alene Lake Management Plan (1994) attempted to address this issue by dividing the lake into four water quality management zones. These zones include, nearshore (water depths less than 20 feet), shallow southern lake (Coeur d'Alene Lake south of the confluence with the Coeur d'Alene River), lower rivers (Coeur d'Alene and St. Joe Rivers affected by back water from Coeur d'Alene Lake), and deep open water (north of the mouth of the Coeur d'Alene River).

Coeur d'Alene Tribe Fish, Water, and Wildlife Program staff monitored stations in the southern section of Coeur d'Alene Lake from Rockford Bay south to the St. Joe River. Selection of sample stations was based on geomorphology, visual habitat characteristics, and the potential for changing water quality conditions during the course of the year. Thirteen sample stations were selected to encompass all four water quality management zones identified in the Coeur d'Alene Lake Management Plan (Figure 2.1). These sites, however, do not include a majority of the deep open water zone, which is a major factor in controlling the water quality of the outflow leaving Coeur d'Alene Lake.

The sample stations can be categorized into five very distinct habitat areas. The first distinct habitat area is comprised of two shallow water stations created entirely by inundation from Post Falls Dam. This


Idaho Locator
N
Coeur d'Alene Lake
Site 01
Site 02
Site 03
Site 04
Site 05
Site 06
Site 07
Site 08
Site 09
Site 10
Site 11
Site 12
Site 13

area is dry during the drawdown period and wetted at full pool. The second habitat area is comprised of the three shallow southern chain lakes of the St. Joe River. These lakes were separated from the Coeur d'Alene Lake system until the completion of Post Falls Dam. The third area consists of three deep, open water sections in the southern part of Coeur d'Alene Lake. These areas are considered pelagic in nature. The fourth habitat area consists of three shallow bays located in the main part of Coeur d'Alene Lake. The fifth area is riverine habitat inundated by waters from Post Falls Dam. Monitoring stations have been established in each of the separate locations (Table 2.1).

Table 2.1 Water quality sample stations grouped by habitat area.

Habitat Area	Stations
Shallow Water	Round Lake
	Chatcolet Lake Shallow
Southern Chain Lakes	Benewah Lake
	Chatcolet Lake
	Hidden Lake
Interior Bays	Carey Bay
	Windy Bay Shallow
	Rockford Bay
Open Water	Conkling Point
	Mid Lake
	Windy Bay Deep
Inundated Rivers	Coeur d' Alene River
	St. Joe River

Parameters

Physical/Chemical

Temperature, dissolved oxygen, pH, and conductivity were monitored at each station using a Hydrolab H20 multi-probe transmitter. Quality control was maintained through strict adherence to the standard operating procedures outlined in the Hydrolab manual (1991). Instrument calibration took place prior to every use. A calibration log was used to recorded the date and time of calibration, analyst performing calibration, calibration parameters, and other comments. At the end of the sampling run the instrument was checked for drift. All readings were recorded in the calibration log. All standards used for calibration were traceable to NIST or other comparable standards. Reagents used for calibration was accompanied by the following documentation: manufacturer, lot numbers, expiration dates, date opened. A logbook was kept which contains all information related to preparation of reagents and standards. Field measurements were completed by lowering the instrument by cable to the bottom and bringing it back up 1-2 meters at a time pausing to allow the instrument to stabilize then recording the values. This step was repeated until the instrument reached the surface.

A Secchi disk (20 cm diameter) was used to estimate the transparency of water. Transparency measured in this way is the mean of the depth at which the Secchi disk disappears when viewed from the shaded side of the boat and at which it reappears upon raising after it has been lowered beyond visibility. Secchi readings are used to empirically estimate euphotic zone depth; the depth at which 99% of the surface radiation has dissipated. Secchi disk readings only represent a portion of the total euphotic zone depth that is more rigorously defined by a submersible photometer. The euphotic zone can also be defined as the depth at which gross photosynthesis exceeds respiration. The relationship between euphotic zone depth and secchi disk readings varies from lake to lake depending on factors which influencing euphotic zone depth. However, a general equation (EZD= 2.2302 + 1.4914(SD) $r^2 = .78$), which we use, has been developed by the FRED division of Alaska Department of Fish and Game (1987). Secchi disk readings are taken at all sites during the sampling run.

Water samples submitted for laboratory analysis were collected using a certified water collection devise and transferred to the appropriate containers for transportation to the contract laboratory. All samples were handled according to Standard methods for the examination of water and wastewater, 18th Ed. (APHA), 1992, procedure 1060: Collection and preservation of samples. Strict chain of custody procedures as outlined in section 1060.B.1: Chain of custody procedures (APHA) was followed. All containers used were specially cleaned and prepared by the contract laboratory.

Total Suspended Solids was analyzed using EPA method 160.2: Gravimetric determination of Total Suspended Solids. TSS is defined as the residue left on a filter paper of 2μm or smaller after a portion of sample has been filtered through (APHA, 1992). A qualified analytical laboratory completed turbidity analysis in accordance with (APHA, 1992) standard method 2130B: Nephelmetric determination of turbidity and/or EPA method 180.1. Turbidity is an expression of the optical property that causes light to be scattered and absorbed rather than transmitted in straight lines (APHA, 1992). Turbidity in water is caused by suspended matter including clay, silt, and finely divided organic and inorganic matter. The clarity of a natural body of water is a major determinant of the condition and productivity of that system (APHA, 1992).

All metals samples were handled as described previously for collection of water for laboratory analysis. Metals samples were preserved by acidification to 2% HNO_3 as soon as possible after collection. Metals samples were analyzed using EPA method 200.7/200.8 Inductively Coupled Plasma scan by a qualified contract analytical laboratory. The following trace elements were analyzed: zinc, silica, antimony, barium, beryllium, magnesium, arsenic, sodium, aluminum, calcium, copper, silver, lead, cadmium, cobalt, nickel, manganese, iron, chromium.

Nutrients

Nutrient samples were collected in the same manner as turbidity and metals. Nutrient sampling consisted of a euphotic zone composite sample determined by secchi disk and temperature analysis, and a hypolimnetic composite sample with the upper portion of the stratum determined by the temperature profile. Composite sampling was in accordance with APHA method 1060.A.3.B: Composite sample collection. All samples were handled according to Standard methods for the examination of water and wastewater 18th Ed. (APHA) 1992 procedure 1060 collection and preservation of samples. The contract laboratory analyzed nutrient samples with an ion chromatograph using EPA method 300.0. The following ions were tested for: ortho-phosphate, nitrate, and nitrite. Other ions looked at were fluoride, chloride, and sulfate.

Primary Productivity

Chlorophyll$_a$ samples were collected in amber colored bottles and placed directly on ice. Samples were collected at the same locations as nutrients. A contract laboratory completed sample analysis. The method used was Standard methods for the examination of water and wastewater 18th Ed. (APHA) 1992 procedure 10200 parts 1: pigment extraction and 2: spectrophotometric determination of chlorophyll.

Sample Timing
The sampling schedule was designed to capture data related to significant changes in the water quality throughout the year. This included physical/chemical characteristics, nutrient characteristics, and phytoplankton and macrophyte growth. Sampling was initiated just prior to the onset of the growing season in the spring and continued until the lake turned over in the fall, marking the end of the growing season. Limited sampling was completed after fall turnover because weather usually prohibited any extensive sampling. During this time, however, very little natural change is occurring. A representative sample was taken during the winter and applied to the rest of the winter season.

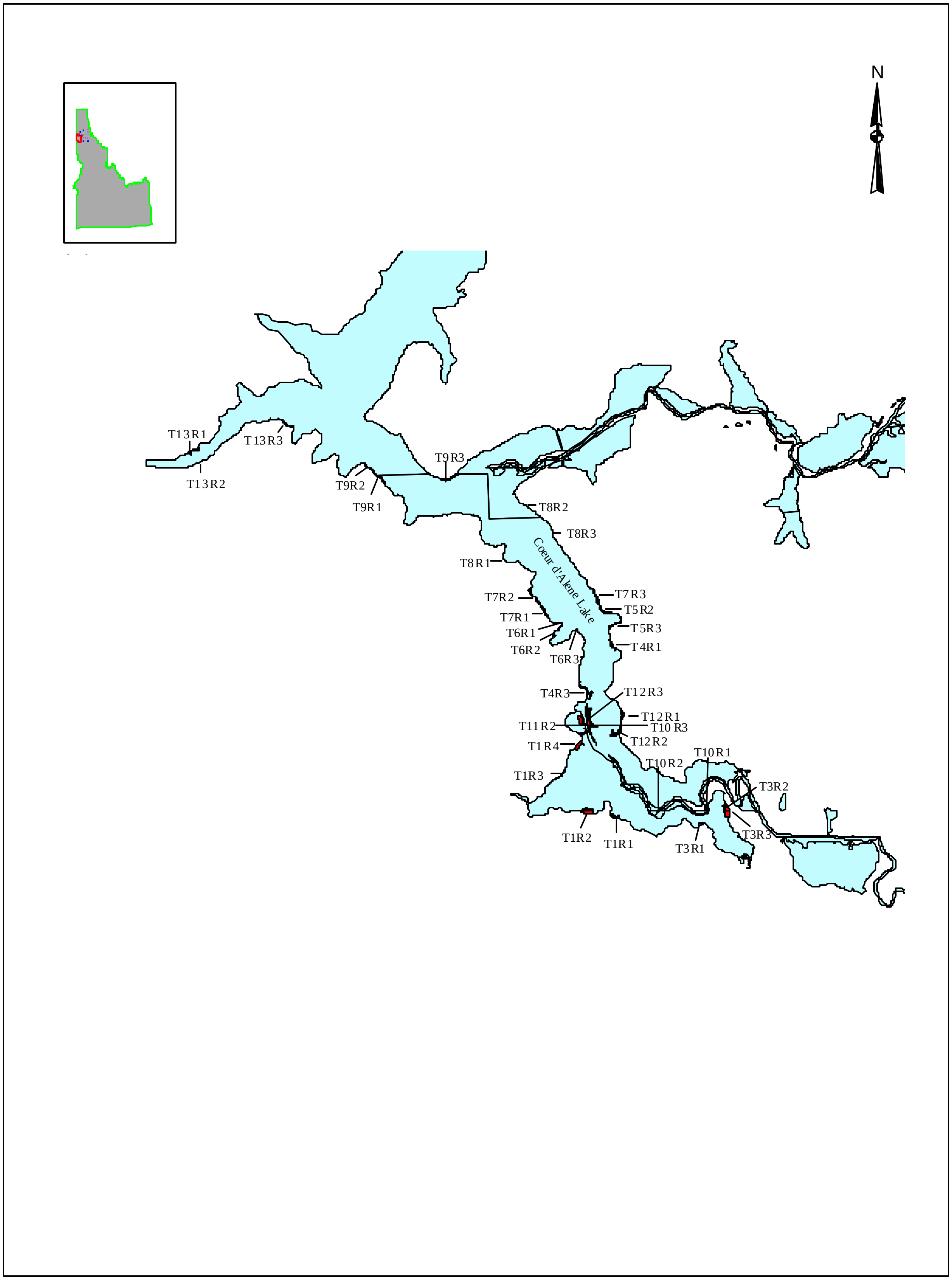
Sampling Schedule
Physical/ Chemical sampling
Sampling was scheduled to begin the last week in February, however, foul weather postponed the start until mid-March. Only one sample was taken between November and February when the lake was isothermal. Ice formed on the surface of the lake within the study area thus, inhibiting sampling during that time frame. The following parameters were monitored at all sites on a bi-weekly basis: temperature, pH, dissolved oxygen, and conductivity. Turbidity was monitored at all sites on a monthly basis. Trace heavy metals were monitored at only three sites on a monthly basis. Surface to bottom depth profiles were taken for temperature, pH, dissolved oxygen, and conductivity. Composite samples were taken in the euphotic zone and the hypolimnion for turbidity and trace heavy metals.

Nutrient Sampling
Five nutrient samples were taken at all sites on a monthly basis from July to November. The following parameters were monitored: Phosphate, Nitrate, Nitrite, Sulfate, Chloride, and Fluoride. Composite samples were taken in the euphotic zone and the hypolimnion.

Phytoplankton (primary productivity)
$Chlorophyll_a$ samples were taken at the same time and frequency as the nutrients. Composite samples were taken in the euphotic zone and the hypolimnion.

2.1.2 Fisheries
Fish abundance surveys were conducted on a monthly basis from July through October 1997 on Coeur d'Alene Lake. The section of Coeur d'Alene Lake sampled extended from Windy Bay south and was divided into 12 different transect areas (Figure 2.2) along a longitudinal axis in an attempt to decrease overall sampling bias. Each transect area contained 2-4 sample reaches. The reach locations were determined by visual habitat characteristics and transect size. These reaches were chosen in order to best represent the shoreline habitat within the transect area. The collective submerged habitat within all reaches spans the ranges of conditions within each transect area.

Fish were collected using horizontal gillnets and electrofishing. Three twisted nylon strand horizontal nets: 12X200, 10X200, and 8X200 feet each with 4 panels of 1-4 inches stretched mesh were set in the deep open water or pelagic zones within each transect area. Nets were used only in locations not susceptible to electrofishing sampling techniques, following the methods described by Huber (1983). One net would be set in the transect area and it would be fished for approximately 12 hours after which it would be pulled and the fish would be removed. Once the net was cleared it would be reset in the same place and fished another 12 hours. This was completed one time each month from July to October.


N
T13R1
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T9R2
T9R1
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Coeur d'Alene Lake
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T3R1

A custom made aluminum boat equipped with a Smith-Root 7.5 GPP electrofishing unit was used to sample the near-shore or littoral areas within the designated reaches according to methods adapted from Reynolds (1983) and Novoteny and Priegle (1974). The voltage of the electrofishing unit was adjusted to produce a current between 5.0 and 8.0 Amps. A current of 5.0-8.0 seemed to produce the best results in the low conductivity waters (35 µmhos- 80 µmhos) of Coeur d'Alene Lake. Each reach was sampled two times per month; once during the daylight hours and once during the nighttime hours. Netters were to net all sizes and species of fish with equal effort in an attempt to limit the amount of sampling bias introduced into the final data set. Duration of the sampling effort varied from 5-10 minutes. Work completed by Miranda, *et al.* (1996) demonstrated that variations in the duration of the sampling period did not affect overall catch per unit effort. They showed that in areas where densities are high shorter sampling times gives equal results when compared to longer sampling times.

Relative abundance is an index of population density that assumes that catch per unit effort (CPUE) is proportional to stock density. However, several physical and behavioral characteristics of each species of interest govern both distribution and susceptibility to sampling techniques used. Thus, large fluctuations in CPUE can occur which will hamper interpretation of the CPUE data. In order to use CPUE, special attention must be given to reducing variability by standardizing gear, methods and sampling design. Relative abundance was determined by calculating the percentage of the total catch for each species for a given sample period and sample area. CPUE was calculated by dividing the number of fish captured for each individual species by the total sample time.

The capture location and total length (mm) was recorded for all fish sampled. All game fish were weighed and scaled for age determination. Age determinations were completed using methods described by Jearld (1983). For yellow perch, scales were collected only from the first 20 fish captured in a single sampling run. All adult cutthroat trout, rainbow trout, largemouth bass, northern pike, and channel catfish were tagged with a numbered floy tag and released. Weight (grams) was recorded only for the first 20 fish of each non-game species collected in a single sampling run.

A habitat based model developed by Hickman and Raleigh (1982) was used to evaluate the suitability of lacustrine habitat types for cutthroat trout. The lacustrine model consists of two components: water quality and reproduction. The water quality component takes three variables into consideration, including temperature, dissolved oxygen and pH. Water quality data collected in 1997 were used to calculate the individual suitability index (SI) values using published curves. The reproduction component was not examined in this report.

2.2 Stream Studies

2.2.1 Water Quality

Water quality monitoring was conducted on 13 streams in 1997 (Table 2.2). Each stream was sampled for the same parameters as described above for lake studies, except chlorophyll$_a$. Metals analyses were only completed at the two Fighting Creek sample sites. Additional monitoring parameters are described below.

A stage/discharge relationship was developed for each stream based on a linear regression of staff gauge height vs. stream discharge. The rating curve was used to determine the annual water budget for each stream sampled. Staff gauge heights were recorded to the nearest 0.002 of a foot. Discharge measurements were taken at low, medium, and high flows in order to complete the rating curve. Discharge measurements were taken in accordance with standard IFIM methodologies (Bovee and Milhouse et. al., 1984). The wetted stream channel was divided into 20 equal cells and water velocity was measured in each cell using a Price model 622 digital flow meter. Discharge for each cell was calculated by multiplying the cell width by depth and velocity. All individual cell discharges were summed to determine total discharge in cubic feet per second. Channel profiles were measured to evaluate changing flow dynamics over time.

Table 2.2 Stream water quality sites and monitoring parameters.

Location	Discharge	Temperature	DO	pH	Conductivity	Turbidity	TSS	Metals	Nutrients
Lower Plummer Creek	X	X	X	X	X	X	X		X
Lower Lake Creek	X	X	X	X	X	X	X		X
Upper Lake Creek	X	X	X	X	X	X	X		X
Lower Fighting Creek	X	X	X	X	X	X	X	X	X
Upper Fighting Creek	X	X	X	X	X	X	X	X	X
Evans Creek	X	X	X	X	X	X	X		X
Benewah Creek[a]	X	X	X	X	X	X	X		X
Windfall Creek	X	X	X	X	X	X	X		X
School House Creek	X	X	X	X	X	X	X		X
West Fork Benewah Creek	X	X	X	X	X	X	X		X
Alder Creek	X	X	X	X	X	X	X		X
Hangman Creek	X	X	X	X	X	X	X		X
Little Hangman Creek	X	X	X	X	X	X	X		X
Indian Creek	X	X	X	X	X	X	X		X

[a] Benewah Creek had three sampling stations, Three Mile, Nine Mile and Upper Benewah.

2.2.2 Habitat Suitability Index Model

A modified habitat suitability index (HSI) model was used to evaluate the effect of water quality parameters on cutthroat trout populations within and among the target watersheds. A HSI was calculated for the water quality subcomponent of the model described by Hickman and Raleigh (1982). Model variables included: average maximum water temperature (V_1); average minimum dissolved oxygen (V_3); annual maximal or minimal pH (V_{13}); and average annual base flow as a percentage of the average annual daily flow (V_{14}). Individual suitability index (SI) values were calculated for each variable using curves published in Hickman and Raleigh (1982). The following equation was used to calculate the final HSI score:

$$C_{OQ} = (V_1 x V_3 x V_{13} x V_{14})^{1/4}$$

Where; C_{OQ} = HSI for water quality component, and

V_n = suitability index for water quality parameters.

Water quality data collected in 1997 and in 1998, when available, were used as input variables. The following modifications were made to address site specific conditions: a seven-day running average of maximum temperature was used; and average minimum dissolved oxygen was calculated for the period of greatest average water temperatures. Continuous discharge measurements were only available for the two sample sites on Lake Creek. For the remaining sites, average annual daily flow was calculated based on a minimum of 12 discharge measurements taken during the year, and average annual base flow was calculated for the period of low flow which corresponded to the greatest average water temperatures.

The final HSI was calculated using both a compensatory and a non-compensatory method. The compensatory method assumes that moderately degraded water quality conditions can be partially compensated for by good physical habitat conditions. The non-compensatory method assumes that degraded water quality conditions cannot be compensated for, and variables with suitability indices (SI) < 0.4 become limiting factors on habitat suitability. For purposes of interpretation, HSI with values ranging from 0 - 0.25 were considered very poor; 0.25 – 0.4 were poor; 0.4 – 0.6 were good; and 0.6 – 1.0 were very good.

2.2.3 Fisheries

Sample Site Selection

The channel types delineated during previous surveys (Lillengreen, 1996) served as the basic geomorphic units for selecting sample sites for conducting fish population surveys. In these early channel type surveys, stream reaches were classified into relatively homogeneous types according to broad geomorphologic characteristics of stream morphology as defined by Rosgen (1994). Sample sites within each reach were selected to include habitat types representative of the reach as a whole (Figures 2.3 – 2.6). The length of each sample unit was defined as twenty times the average stream width, with a minimum sample distance of 100 meters. Longer stream reaches were sampled more intensively than shorter reaches. Sample sites were also selected in each of the tributaries known to have spawning activity, regardless of whether channel type surveys had been completed. In these cases, sample sites were distributed evenly at approximately 1,500 meter intervals.

Sites were sampled in the summer to quantify the abundance and distribution of fishes during base flow conditions (July 30 – August 22, 1996 and June 6 – July 11, 1997). An additional sampling effort in the fall (September 11 – October 28, 1996 and August 11 – September 11, 1997) attempted to capture young of the year fish that had been missed during the summer sampling period and to document fish migration in response to changing water quality conditions.

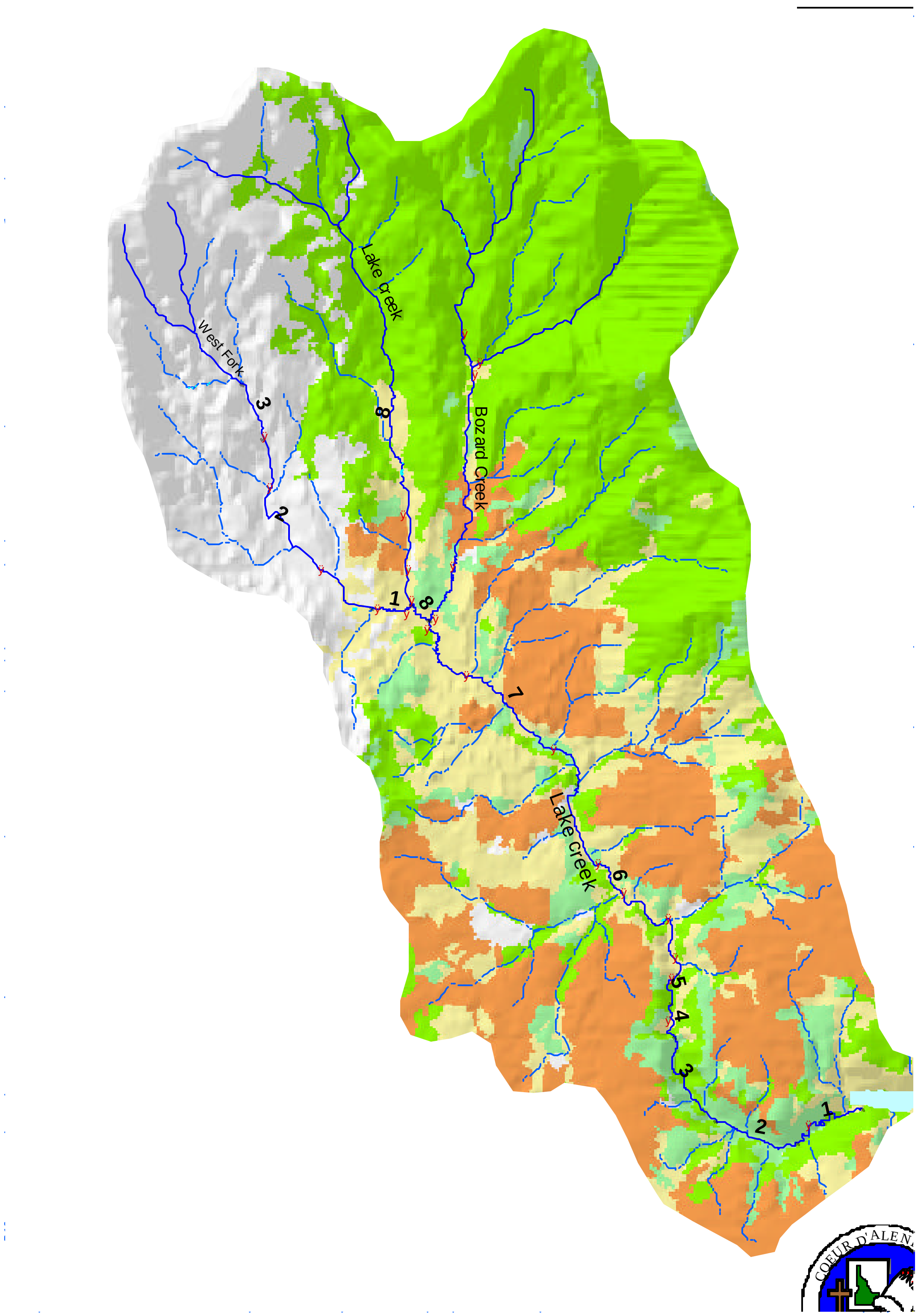
Population Estimates

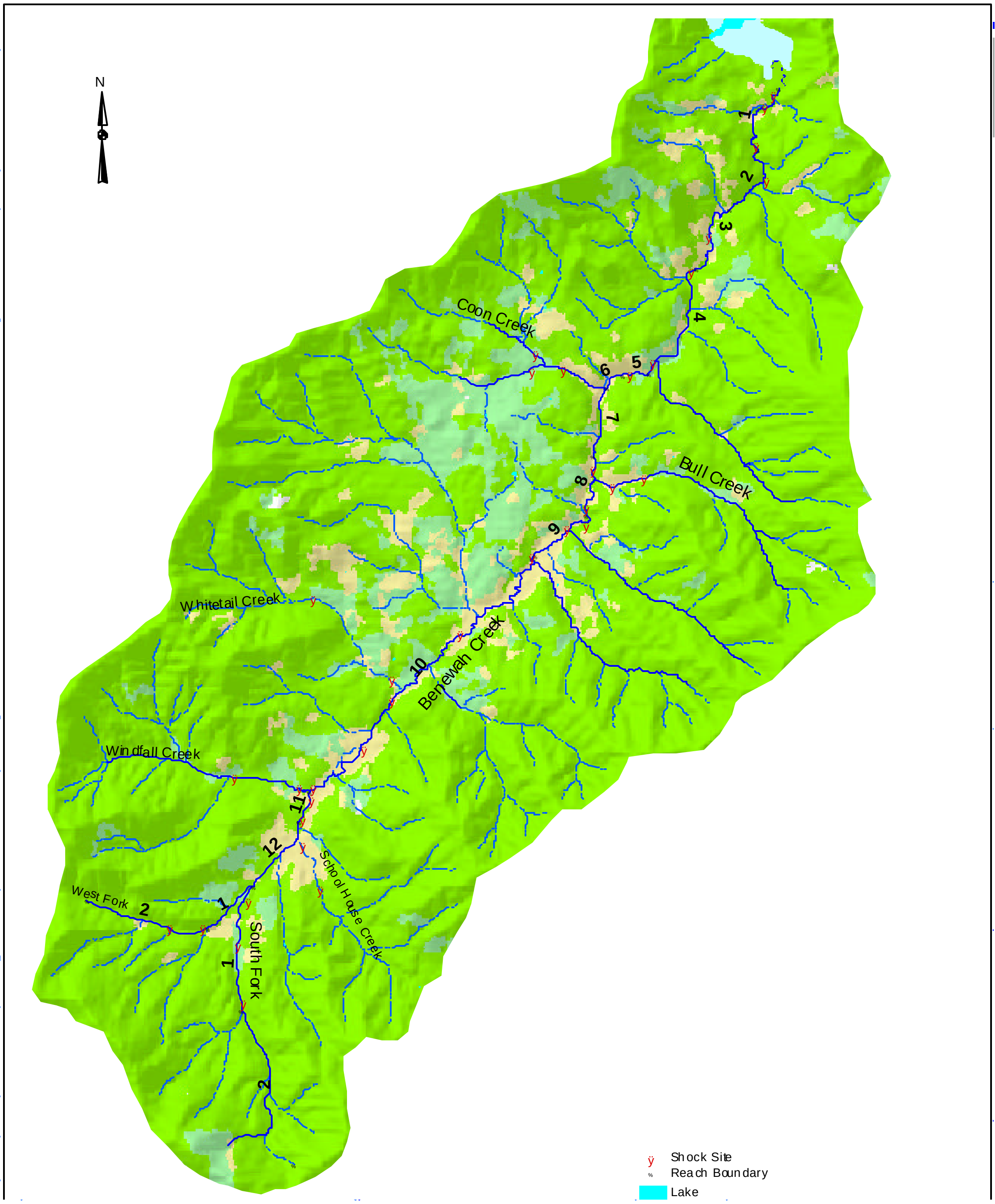
Trout populations were estimated in 1996 and 1997 using the removal-depletion method (Seber and LeCren 1967, Zippen 1958). Blocknets were placed at the upstream and downstream boundaries to prevent immigration and emigration. Each sample site was electrofished using the standard guidelines and procedures described by Reynolds (1983). Fish were collected by spot shocking using a Smith-Root Type VII pulsed-DC backpack electrofisher. Two electrofishing passes were made for each sample site. Salmonid species, including cutthroat trout, brook trout, and bull trout, were the target species for this study. Captured fish were identified, enumerated, measured (TL to nearest mm), and weighed. Cutthroat trout greater than 200 mm in length were tagged with a Floy FD-6B numbered anchor tag. Other species such as longnose dace, redside shiner, longnose sucker, and sculpin (sp.) were considered incidental catch and were only counted.

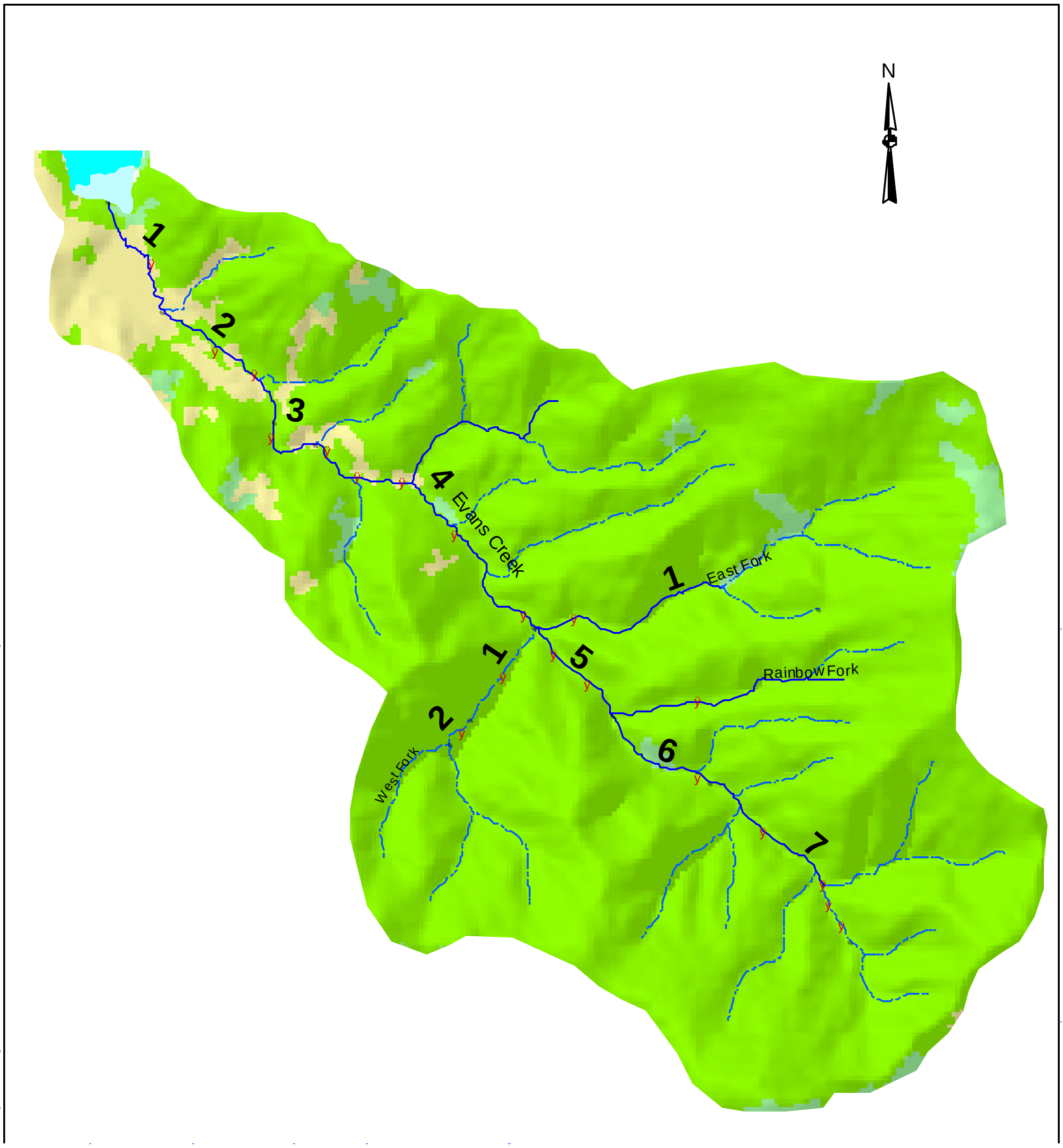
Population estimates were calculated using the following equation (Armour et. al. 1983):

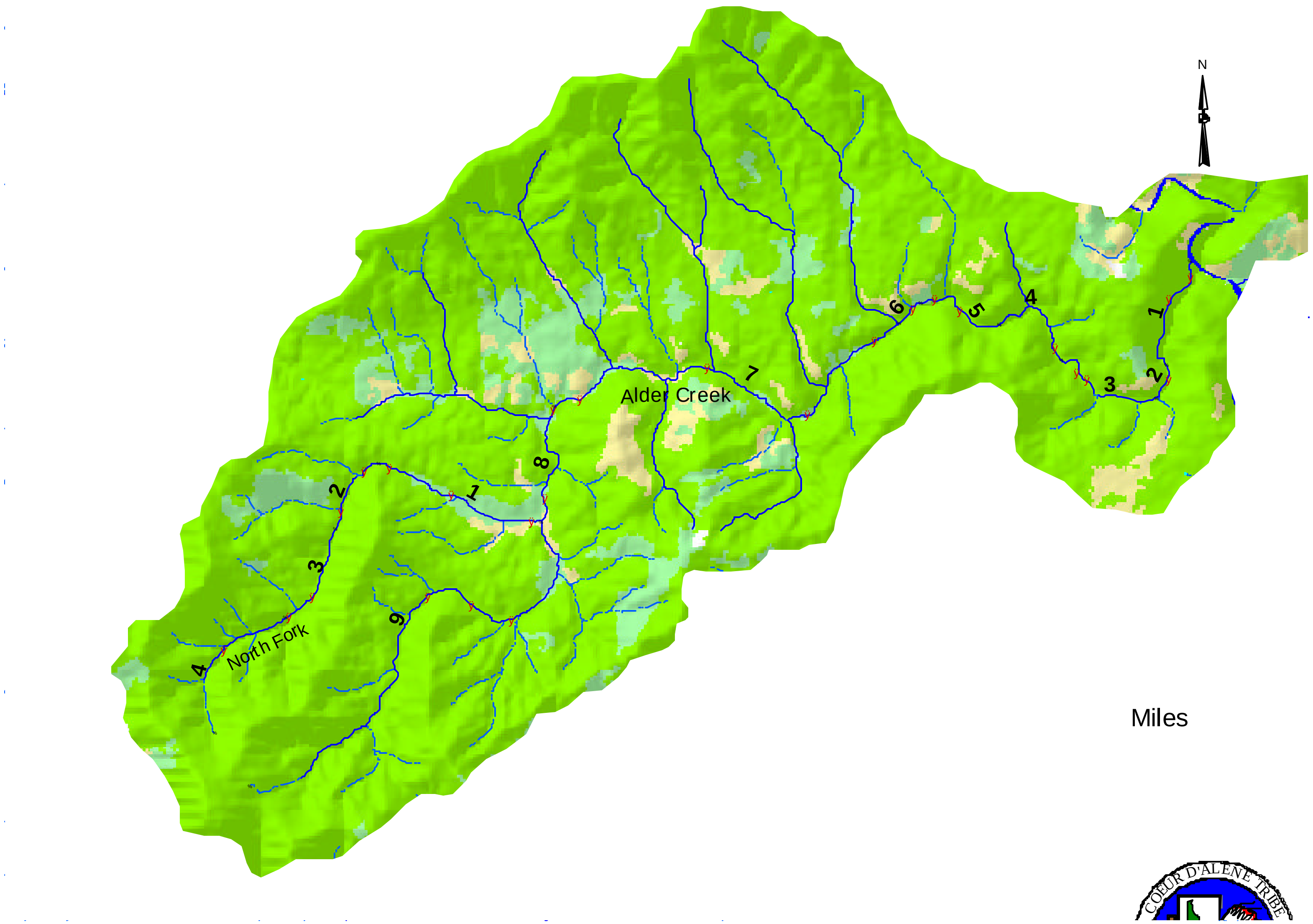
$$N = \frac{U_1}{1 - (U_2 / U_1)}$$

Where:
N = estimated population size;


Lake creek
West Fork
Bozard Creek
Lake creek
COEUR D'ALENE


N
Coon Creek
Bull Creek
Whitetail Creek
Benewah Creek
Windfall Creek
West Fork
South Fork
School House Creek
1
2
3
4
5
6
7
8
9
10
11
12
Shock Site
Reach Boundary
Lake


N
1
2
3
4
Evans Creek
1
East Fork
1
5
Rainbow Fork
2
West Fork
6
7



N
Alder Creek
North Fork
Miles
COEUR D'ALENE TRIBE

U_1= number of fish collected in the first pass; and
U_2= number of fish collected in the second pass.

The standard error of the estimate was calculated as:

$$se(N) = \sqrt{\frac{M(1 - M / N)}{A - \left[(2p)^2 (U_2 / U_1)\right]}}$$

where:
se(N) = standard error of the population estimate;
M= $U_1 + U_2$;
A= $(M/N)^2$; and
p= $1 - \frac{U_2}{U_1}$.

The population estimates were converted into density values (# fish/100 meters) for each sample site then extrapolated to the reach in which the samples were collected. The confidence intervals were converted in the same manner.

Age and Growth

Raw scales were used for age determination and calculating growth rates. Salmonid scales were taken from the side of the body just behind the dorsal fin and above the lateral line (Jearld 1983). Scales samples were sorted by watershed to allow for independent determination of age and growth rate. In the laboratory, several dried scales were mounted between two glass microscope slides and viewed using a Realist, Inc., Vantage 5 microfiche reader. Age was determined by counting the number of annuli (Lux 1971, Jearld 1983). Simultaneous to age determination, a measurement was made from the center of the focus to the furthest edge of the scale. Along this line, measurements were made to each annulus under a constant magnification. Annual growth was then back calculated using the Lee method as described by Carlander (1981). The formula used:

$$L_i = a + \left(\frac{L_c - a}{S_c}\right) S_i$$

where:
Li = Length of fish (in mm) at each annulus;
a = intercept of the body scale regression line;
Lc = length of fish (in mm) at time of capture;
Sc = distance (in mm) from the focus to the edge of the scale; and
Si = scale measurement to each annulus.

The intercept (a) was obtained from the linear regression of body length versus scale length at time of capture. The proportional method of back-calculation was used for species with small sample sizes due to poor regression results. The following equation was used:

$$L_i = \left(\frac{S_i}{S_c}\right) L_c$$

This formula does not take into account the size of fish at scale formation as does the Lee method.

A linear regression of body length versus age was calculated independently for fish from each subject watershed and the resulting equation was used to determine the age of fish for which scale samples were not taken.

Trout Migration

Migration traps were installed in Lake Creek, Benewah Creek, Evans Creek, and Alder Creek to assess migratory patterns, reproductive cycles, distribution, and relative abundance. Traps were functional from March 24 – June 8, 1996 and March 6 – June 5, 1997, except during periods of high stream flow. The traps consisted of a weir, runway and a holding box. The design was a modification of the juvenile downstream trap found in Conlin and Tuty (1979). Traps were installed in pairs at some locations to allow monitoring of both upstream and downstream movements of fish (Table 2.3). Paired traps were placed approximately 20 meters apart.

Traps were checked at least once daily during peak spawning periods from mid-March through the middle of May and once daily afterwards until late June, when traps were removed. Fished captured in the traps were identified, counted, measured, and weighed. A scale sample was taken to assess the age, growth, and condition of the fish. Trap efficiency was calculated to allow for comparisons among years and was determined as catch per unit effort (CPUE), where one unit effort was defined as one 24 hour period.

Table 2.3. Fish trap location in the four target watersheds during 1996-1997.

Lake Creek	Benewah Creek	Alder Creek	Evans Creek
At Hyw 95 crossing (p)	Mouth Benewah (p)	At mouth of creek	At mouth of creek
Upstream of Bozard Creek confluence	Mouth W.F. Benewah		
Mouth Bozard Creek	Mouth S.F. Benewah		
	Mouth Coon Creek		
	Mouth Whitetail Creek		
	Mouth Windfall Creek		

(p) Indicates a paired trap location.

3.0 Results

3.1 Lake Studies

3.1.1 Water Quality

Seven physical/chemical properties of water, two essential nutrients, and 11 dissolved metals were tested for on Coeur d'Alene Lake in 1997. The testing program was directed primarily at the properties of water that most affected fish production and distribution within the lake. The pH of the water in Coeur d'Alene Lake was tested at 13 different sites. Vertical profiles were taken at two-week intervals from April to November. The pH of Coeur d'Alene Lake does not change very much from season to season or on an annual basis. Observed values ranged from 6.8 to 8.0 (Appendix A), all within the optimal tolerance limits for cutthroat production. The only variation occurred at three stations in the southern lakes section (Chatcolet Lake, Benewah Lake, and Hidden Lake) where the pH rose to 9.4 (Figure 3.1) in the upper 2 meters of the water column. The three stations that showed similar changes in pH were in geomorphologically similar areas.

Vertical profiles of the specific conductance were taken concurrently with the other physical/chemical parameters (Appendix A). All conductivity measurements were within the tolerance limits for cutthroat trout production and ranged from 26 μmhos too 82 μmhos. Any variability to the conductivity was due to natural environmental conditions except at the mouth of the Coeur d'Alene River (Figure 3.2) where higher than normal levels of dissolved metals are flowing into the lake. Values remained very stable during the fall, winter, and spring months. Only during the peak summer conditions did variation occur.

Vertical profiles of dissolved oxygen were taken at each of the thirteen stations (Appendix A). Dissolved oxygen, when at low concentrations is an indication of high levels of organic decomposition. The surface water of every sampling station remained at acceptable levels (>6.0 mg/L) over the course of the entire year. However, four of the thirteen sampling stations showed D.O. concentrations of less than 6.0 mg/L (Table 3.1). Three of the stations, which violated the dissolved oxygen standard, were located in geomorphologically similar areas (Benewah Lake, Chatcolet Lake, and Hidden Lake) the fourth was located in the mid-lake sampling station. The drop in D.O. is most likely related to the decomposition of large quantities of aquatic macrophytes growing in these areas.

Table 3.1 Sample stations on Coeur d' Alene Lake that had a dissolved oxygen reading less than 6.0 mg/L.

Location	Depth (m)	Dissolved Oxygen (mg/L)
Mid Lake	13	4.5
Hidden Lake	7	0.25
Chatcolet Lake	9	0.50
Benewah Lake	4.5	1.25

The lowest dissolved oxygen concentrations were located in Hidden Lake where a reading of 0.25 mg/L was recorded in the lowest one meter of the lake. Dissolved oxygen concentrations in Hidden Lake were in violation of the 6.0 mg/L standard in the lowest 2.5 meters of the water column. Chatcolet Lake had the second lowest reading (0.50 mg/L) and was in violation of the 6.0 mg/L standard in the lowest 6 meters of the water column. Benewah Lake was also in violation of the 6.0 mg/L standard in the bottom 1 meter with a low of 1.25 mg/l reading. The only station found in violation of the 6.0 mg/L standard within the main Coeur d'Alene Lake was the mid-lake station where the 6.0 mg/L standard was violated in the bottom 1 meter with a reading of 4.5 mg/L. This drop in DO levels is a general indicator of increasing trophic status or eutrophication. The general trend was an increase in trophic status in a north to south direction. However, Conkling Point sample station which is between mid-lake and Hidden Lake did not violate the 6.0 mg/L dissolved oxygen standard.

Vertical profiles of temperature were taken at all thirteen stations during the course of the year (Appendix A). Geomorphologically similar stations showed similarities in the temperature profiles in both timing of stratification and magnitude of the warming. Shallow stations heated up sooner than deeper water stations. The shallow southern lakes had more variability in the timing and magnitude of

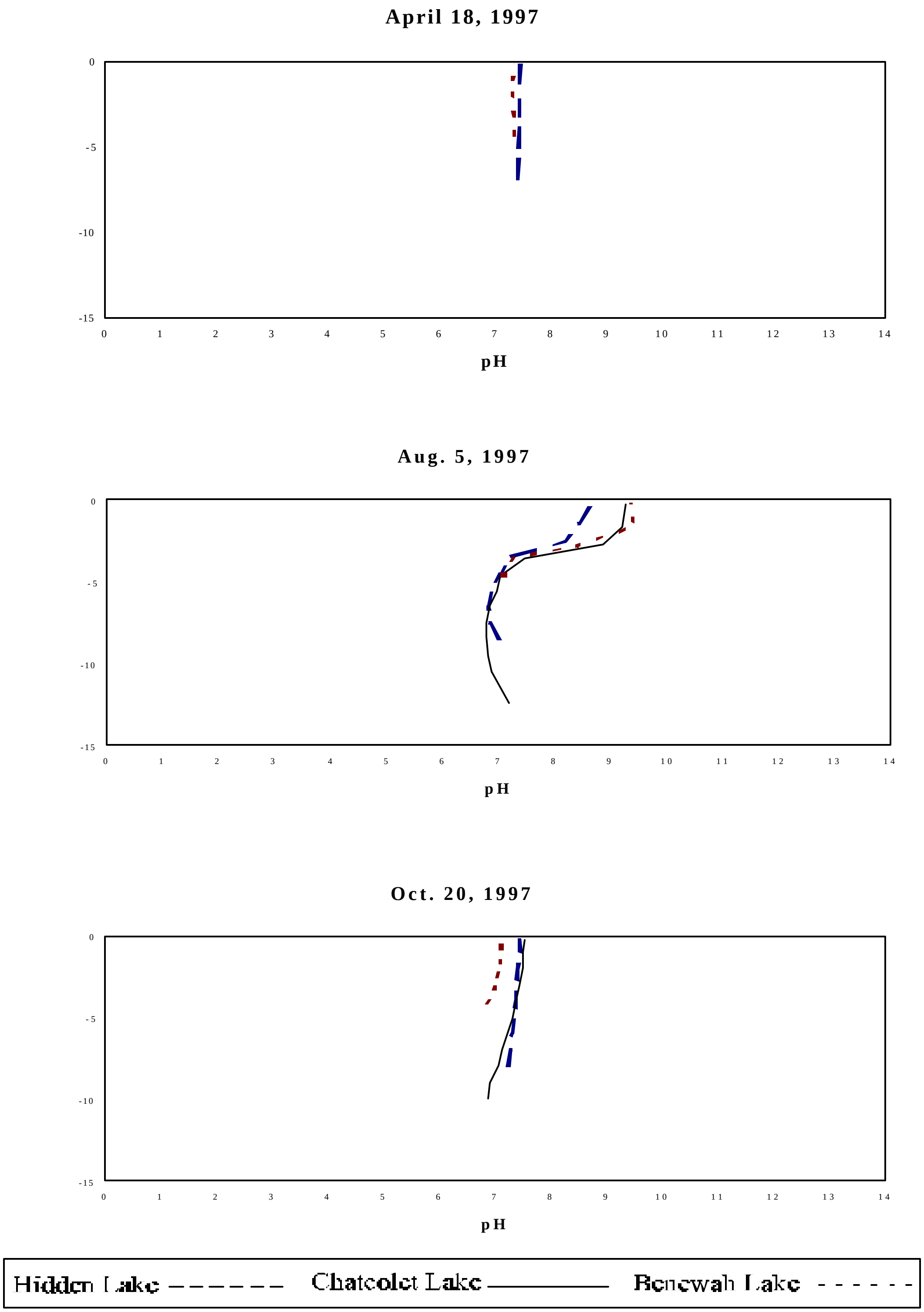
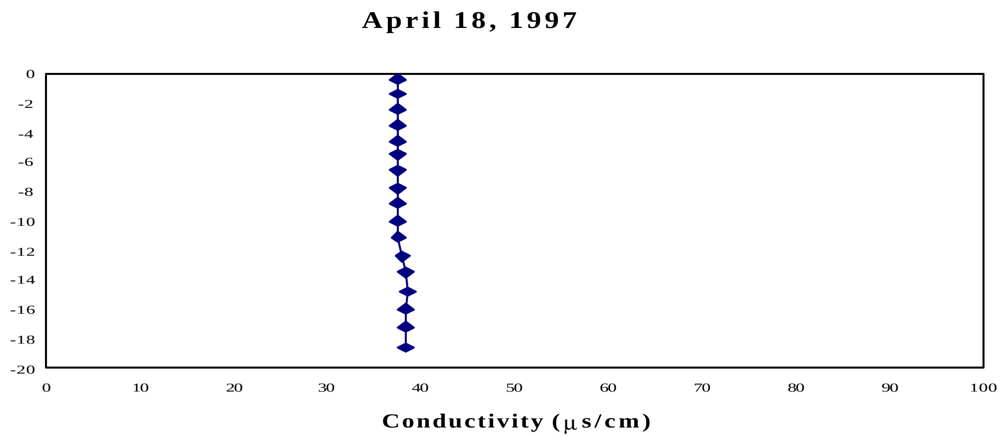
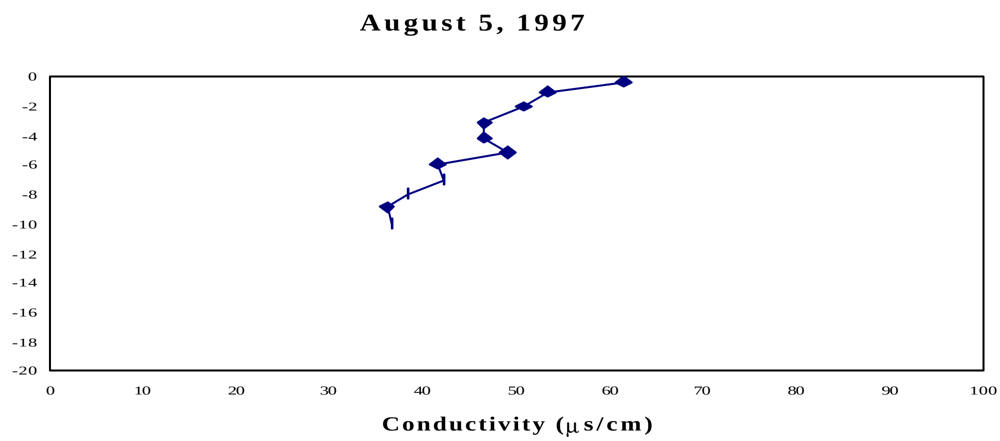


Figure 3.1 Peak spring, summer and fall pH profiles for three geomorphologically similar sampling locations on Coeur d'Alene Lake during 1997.





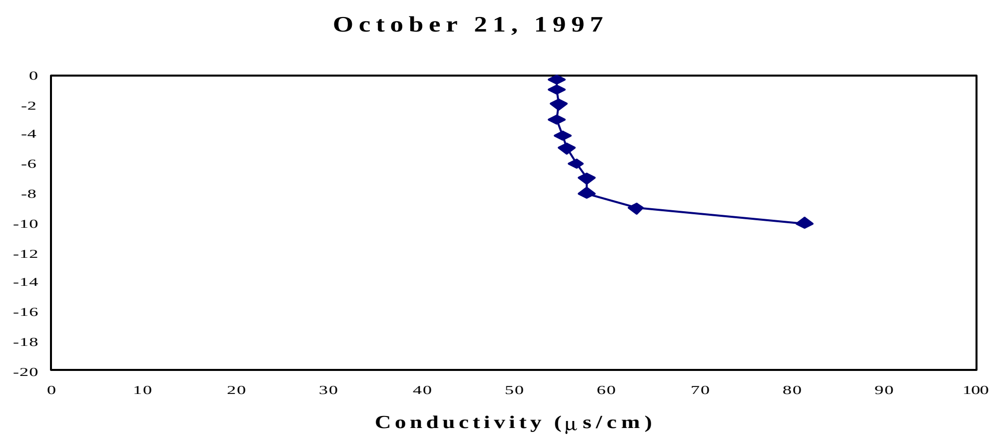


Figure 3.2 Peak spring, summer and fall conductivity profiles for the Coeur d'Alene River during 1997.

the change. All stations were isothermal (5.5°C) on the April 18th sample date with formation of a thermocline by May 16th.

In the shallowest stations (Round lake and Chatcolet Shallow), 1.5m deep or less, the epilimnion extended to the bottom before May 16th (Figure 3.3). In the shallow southern lake stations (Chatcolet Lake, Benewah Lake, and Hidden Lake) the thermocline was present by May 16th and reached its deepest point on September 17th however, by September 29th the stations were isothermal and the lakes had turned over (Figure 3.4). At turnover the isothermal temperature was 15.5° C.

Vertical profiles for the interior bay stations (Windy Bay Shallow, Rockford bay, and Carry Bay) showed that the thermocline had started to build in by May 16th and the water nearest to the bottom had warmed from 5.5° C to 7.0° C (Figure 3.5). By June 26th the thermocline had reached the bottom. By September 17th all of the interior bay sample stations were isothermal at 15.5° C.

Temperature profiles for the deep-water stations (Conkling Point, Windy Bay Deep, Mid-Lake) showed a definite thermocline by May 16th (Figure 3.6) with complete thermal stratification by August 5th. The thermocline was still present in the deepest sampling station on October 22nd, however, it was nearly broken down in the other two deep water stations. By November 4th the deep water stations were isothermal but had only cooled to about 10.5° C while the interior bay sample stations had cooled to 10.0° C and the 3 shallow southern lakes sample stations and 2 shallow stations had cooled to 7.0° C (Appendix A).

Vertical temperature profiles for the riverine sample stations showed similar timing in the formation of the thermocline (Figures 3.7 and 3.8). The St. Joe sample station did show slightly higher temperatures on the average during the spring. The peak temperatures for the Coeur d'Alene River sample station during the other times of year was slightly higher than the peak temperatures for the St. Joe River.

Optimal temperatures for adult salmonid rearing are around 15.0^0 C. In the shallowest sampling stations temperatures greater than the 15.0^0 C temperature standard existed from July 8th through September 29th from surface to bottom. The temperature peaked at 26.5^0 C on August 8th. In the shallow southern lakes sampling stations the 15.00 C temperature criteria was exceeded from August 5th to September 29th surface to bottom however, between June 11th and August 5th the temperature criteria was exceeded and habitat was limited in increasingly larger portions of the water column. The temperature peaked at 26.5^0 C on August 8th. In the interior bays sample stations the temperature criteria was exceeded from September 17th to September 29th surface to bottom however, the temperature criteria was exceeded in increasingly larger portions of the water column between May 29th and September 17th. The temperature peaked on August 5th at 23.5^0 C. In the deep water sampling stations the temperature criteria were never exceed from surface to bottom however, the temperature standard was exceed in a portion of the water column and habitat was limited in that area. The criteria were exceeded between June 11th and September 29th except in the Windy Bay deep station where it was exceeded by May 29th. The depth of 15.0^0 C water increased from June 11th to August 27th then it gradually decreased to September 29th reaching a maximum depth of 13 meters on August 27th.

Total suspended solids were fairly uniform throughout the epilimnion of the lake (Table 3.2) with only a few differences found. The shallow stations ran slightly higher than the other stations with Round Lake reaching a high of 16.0 mg/l. The southern lakes also ran slightly higher with Hidden Lake and Benewah Lake reaching a high of 10 mg/l. The hypolimnion was quite variable throughout the lake (Table 3.3). The

Windy Bay deep reached a high of 27.0 mg/l. Drinking water standards are set a 500 mg/l however, levels much lower can impart a foul taste to the water. No analysis of the composition of the suspended

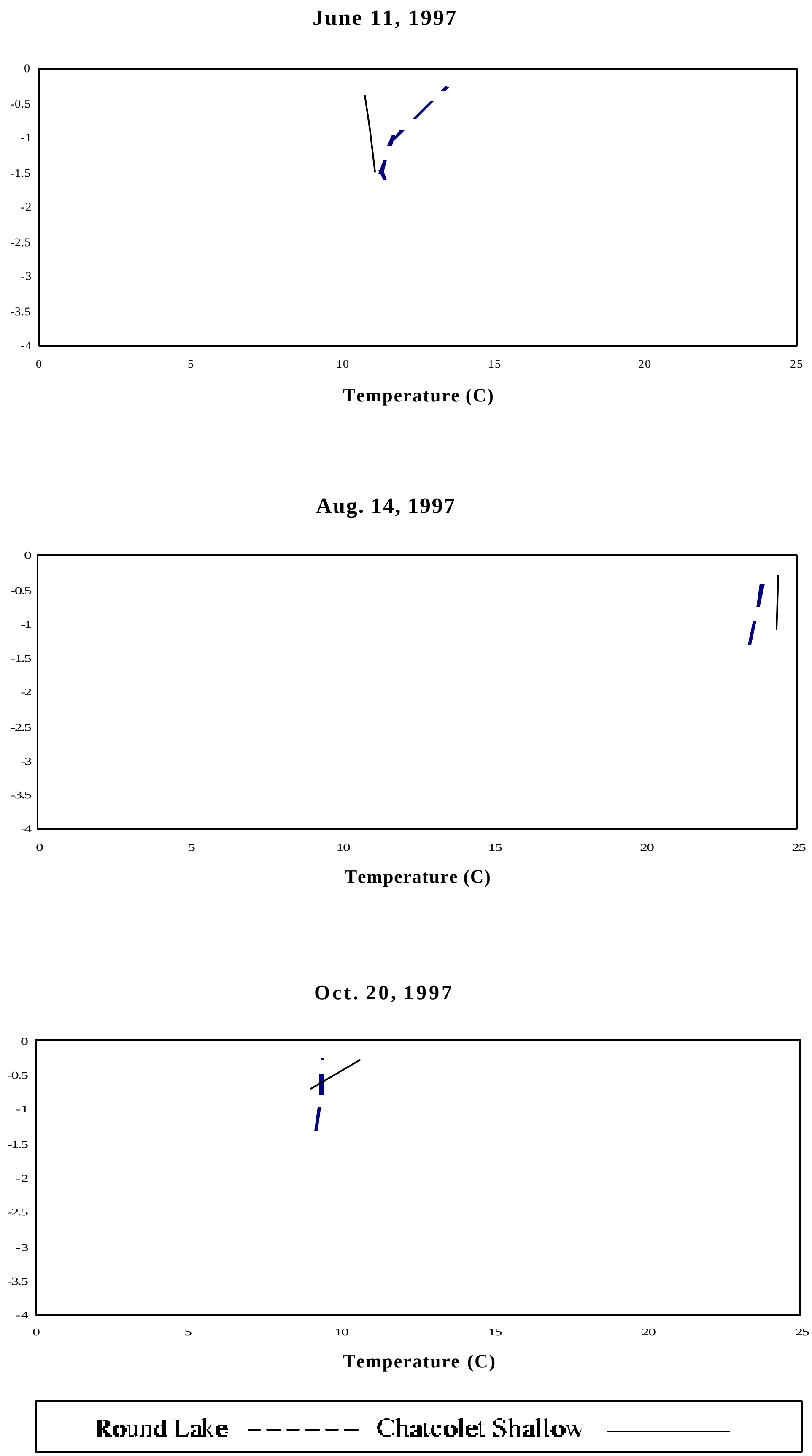


Figure 3.3 Peak spring, summer and fall temperature profiles vs depth for Two geomorphologically similar sampling locations on Coeur d'Alene lake during 1997.

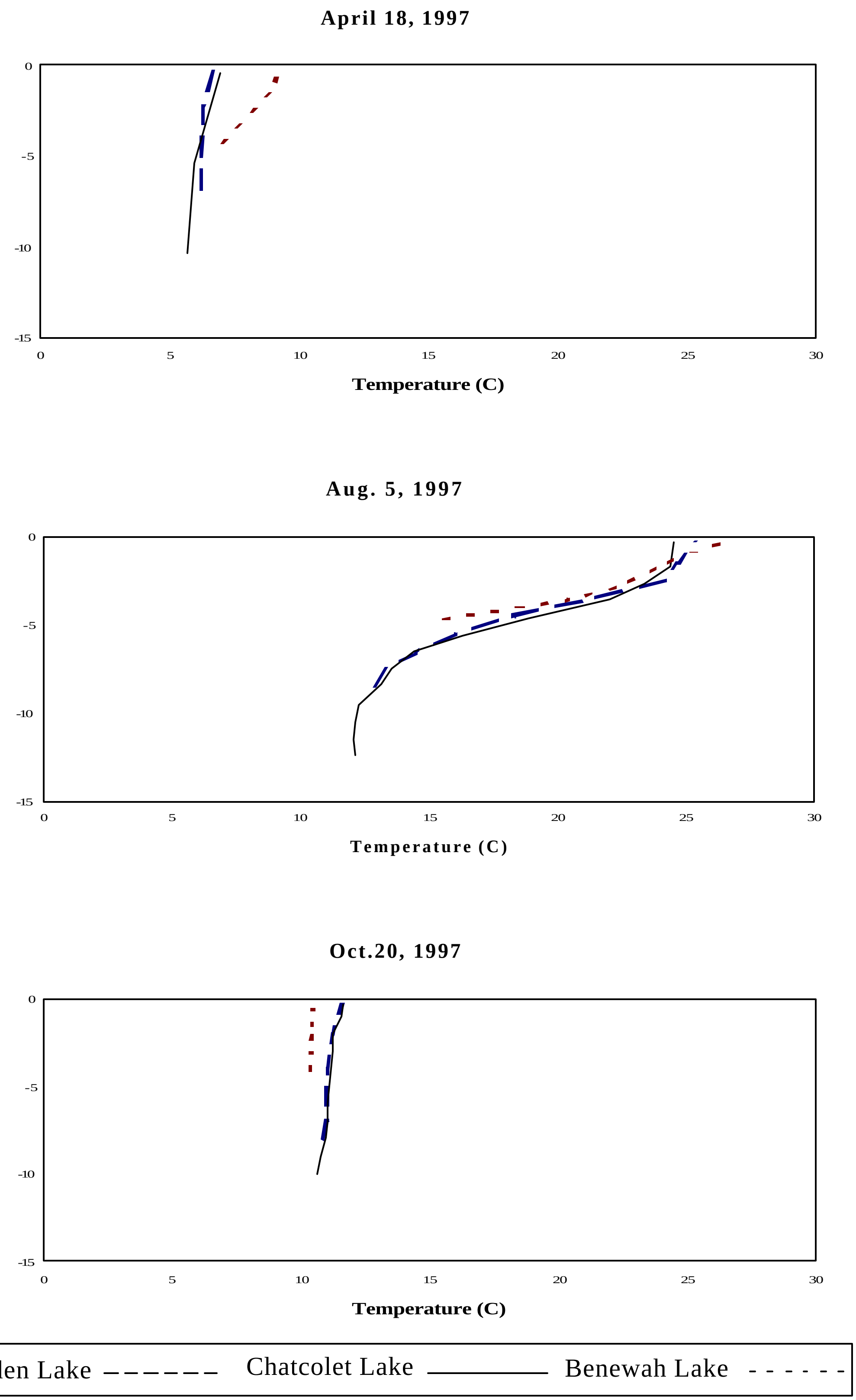


Figure 3.4 Peak spring, summer and fall temperature profiles vs depth for threegomorphologically similar sampling locations on Coeur d'Alene Lake during 1997.

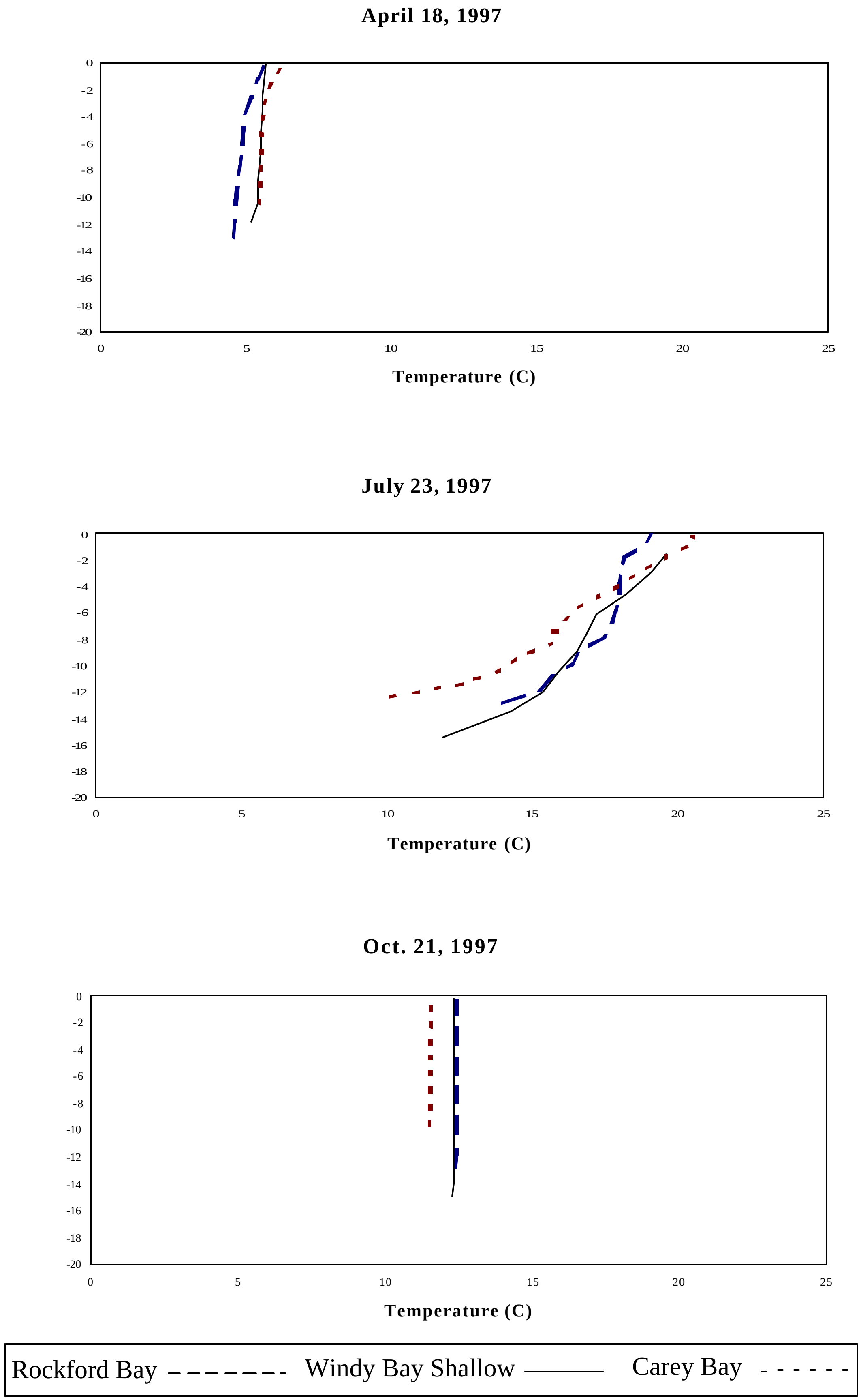


Figure 3.5 Peak spring, summer and fall temperature profiles vs depth for Three geomorphologically similar sampling locations on Coeur d'Alene Lake during 1997.

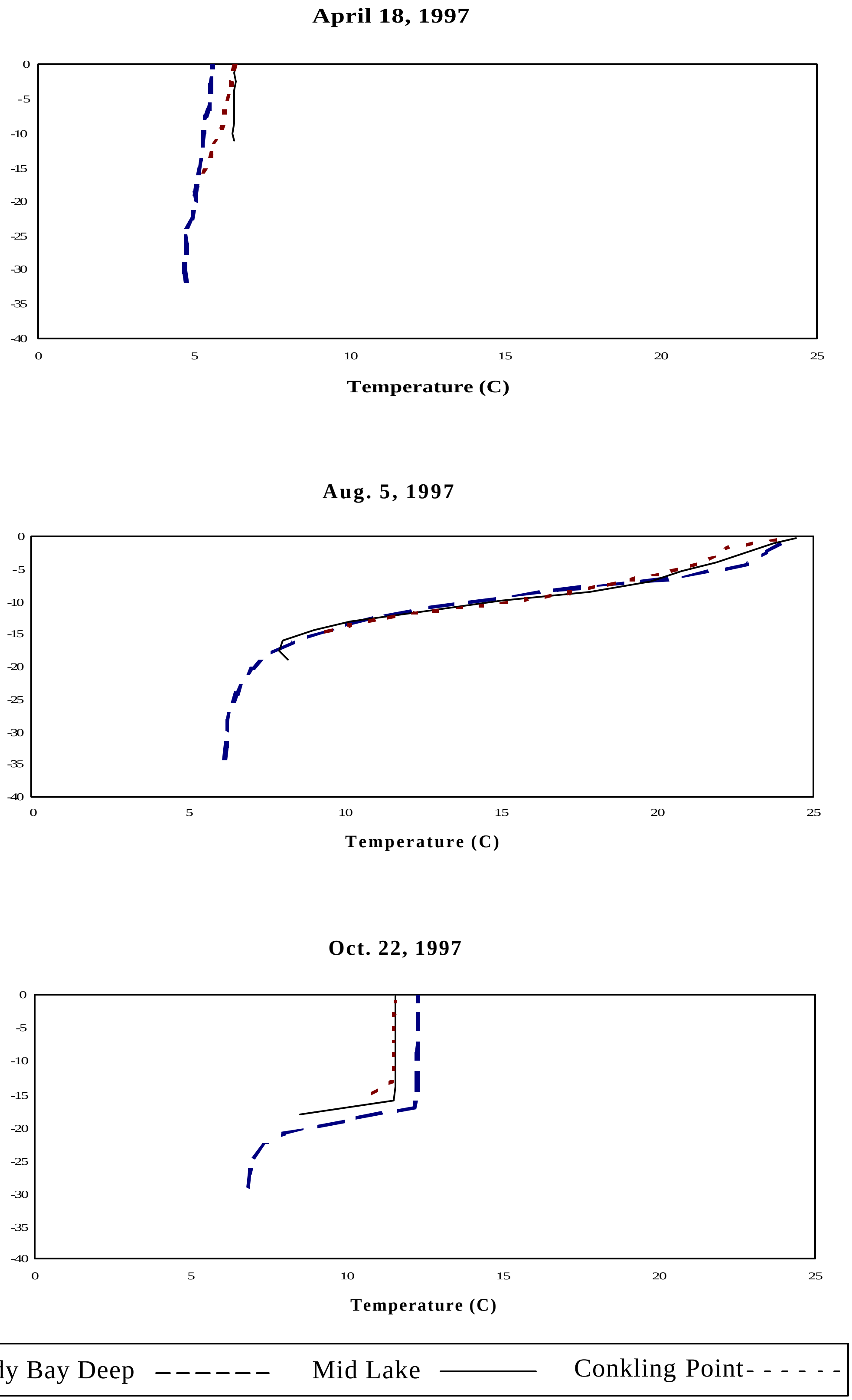


Figure 3.6 Peak spring, summer and fall temperature profiles vs depth for Three geomorphologically similar sampling locations on Coeur d'Alene Lake during 1997.

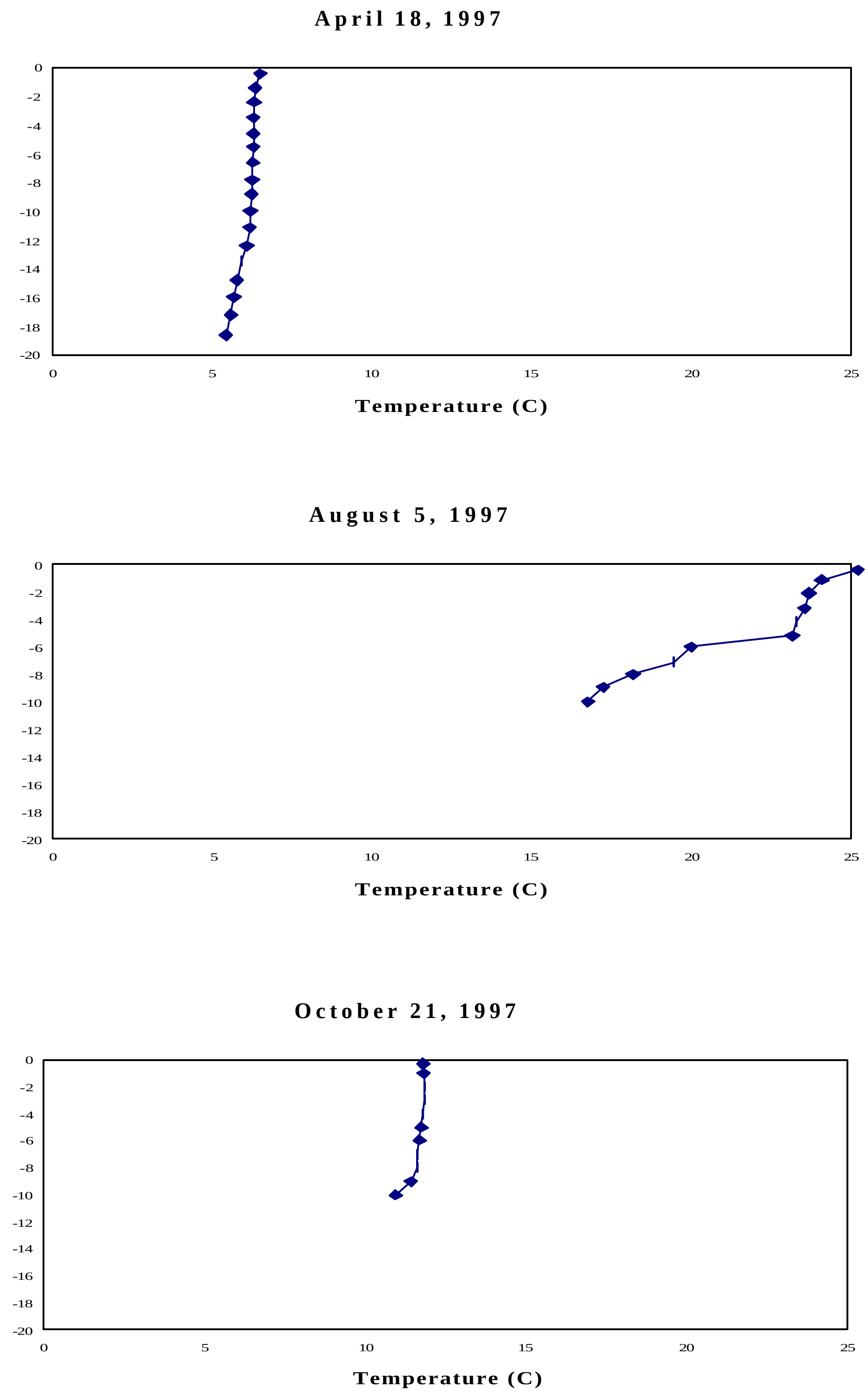


Figure 3.7Peak spring, summer and fall temperature profiles vs depth for the Coeur d'Alene River during 1997.

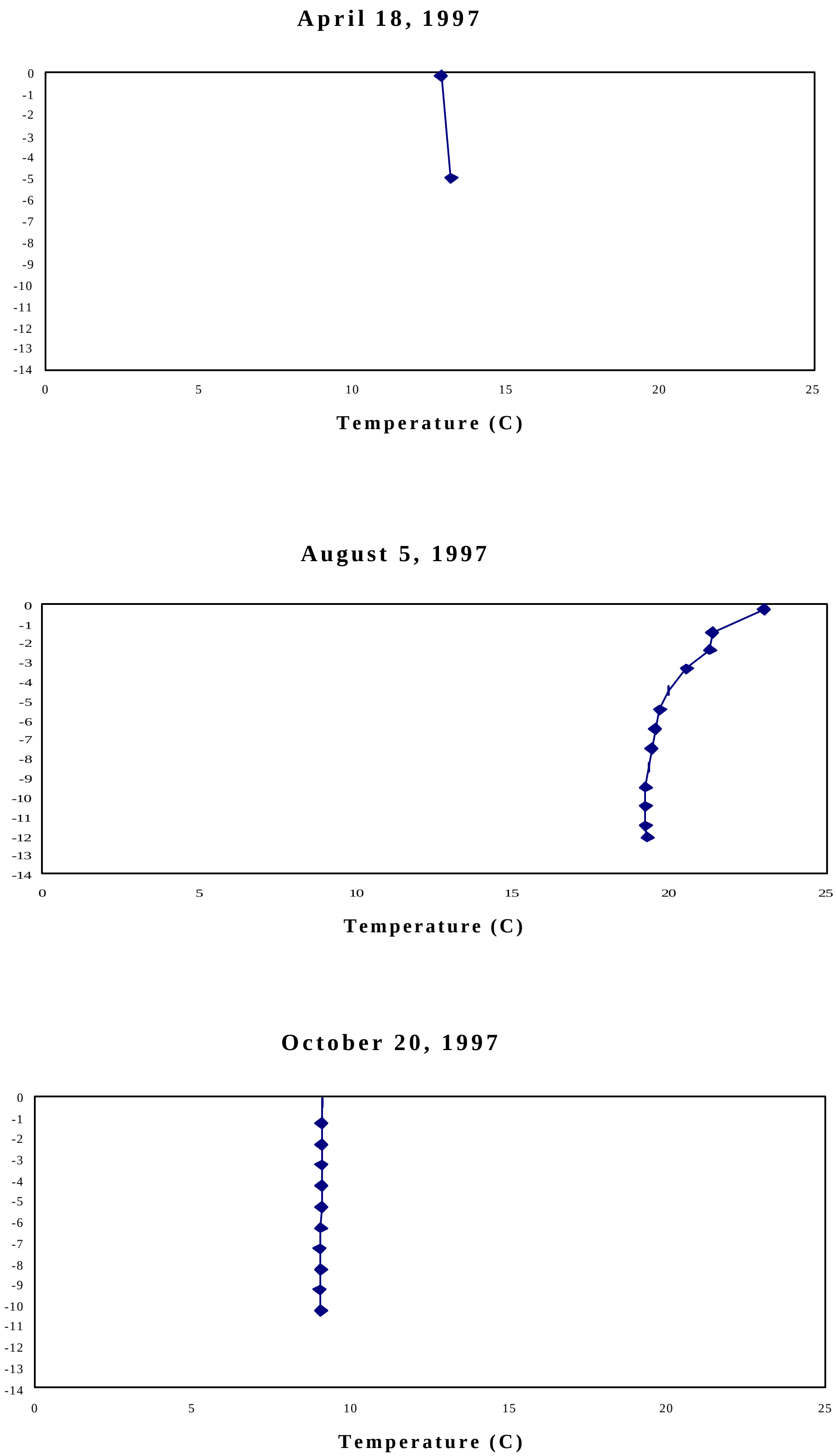


Figure 3.8 St. Joe River peak spring, summer and fall temperature profiles vs depth for 1997.

Table 3.2 Total suspended solids (mg/L) results from the epilimnion taken at thirteen stations on Coeur d'Alene Lake, Idaho.

		Date			
Nutrients	Location	8/13/97	9/16/97	10/20/97	11/4/97
TSS	Rockford Bay Upper	2.000	2.000	0.250	0.250
	Windy Bay Shallow Upper	2.000	2.000	0.250	0.250
	Windy Bay Deep Upper	2.000	2.000	0.250	0.250
	Coeur d'Alene River Upper	2.000	2.000	0.250	0.250
	Mid Lake Upper	2.000	2.000	0.250	1.500
	Carey Bay Upper	2.000	2.000	0.250	4.000
	Conkling Point Upper	2.000	2.000	0.250	6.500
	Hidden Lake Upper	10.000	97.000	2.500	0.250
	Round Lake	2.000	2.000	1.500	16.000
	Chatcolet Lake Upper	2.000	2.000	2.000	0.250
	Chatcolet Lake Shallow	10.000	16.000	6.500	4.000
	Benewah Lake Upper	10.000	3.000	8.000	-
	St. Joe River Upper	-	2.000	5.000	3.000

- No sample taken to lab.

Table 3.3 Total suspended solids (mg/L) results from the hypolimnion taken at thirteen stations on Coeur d'Alene Lake, Idaho.

				Date	
Nutrients	Location	8/13/97	9/16/97	10/20/97	11/4/97
TSS	Rockford Bay Lower	2.000	2.000	0.250	0.250
	Windy Bay Shallow Lower	2.000	2.000	0.250	0.250
	Windy Bay Deep Lower	2.000	2.000	0.250	29.000
	Coeur d'Alene River Lower	3.000	2.000	0.250	1.500
	Mid Lake Lower	2.000	2.000	1.000	3.000
	Carey Bay Lower	2.000	2.000	0.250	4.000
	Conkling Point Lower	2.000	2.000	0.250	7.500
	Hidden Lake Lower	10.000	2.000	3.000	0.250
	Chatcolet Lake Lower	20.000	5.000	12.500	0.250
	St. Joe River Lower	-	2.000	4.500	0.250

- No sample taken to lab.

solids was completed. However, it was noted that high levels of suspended sediment were present in the southern lakes sample station and that most likely the high suspended solids present in the Windy Bay deep station was related to decomposing algae not sediment.

Turbidity in the epilimnion and hypolimnion showed the same trend as suspended solids (Tables 3.4 and 3.5) with a general increase on a North to South axis. The highest turbidity reading was recorded at the Chatcolet shallow sample station (11.2 NTU). The next highest was Benewah Lake (5.810 NTU) followed by Hidden Lake (4.760 NTU). The lowest value was recorded at the Windy Bay Deep sample station (0.230 NTU). The high turbidity readings were due to suspended sediments flowing in from Plummer Creek a tributary to Chatcolet Lake.

The following nutrients were tested for on two dates, one in October and one in November, in Coeur d'Alene Lake: ortho-phosphate, nitrate, and nitrite. Ortho-phosphate concentrations were below the detection limit (0.026 mg/l) at all sites in both the epilimnion and hypolimnion (Tables 3.6 and 3.7). The data were reported as half of the detection limit so data point loss would not occur. For the most part nitrate concentrations sampled at the 13 stations (Table 3.8) were below the detection limit (0.005 mg/l) thus, all data below detection limits were reported as half detection limit. In only a few instances (both stations in Windy Bay, Rockford Bay, and the two shallow stations) did nitrate concentrations exceed the detection limit in the epilimnion, reaching a high of 0.113 mg/l at the Rockford Bay sample station in the October sample period. However, in the hypolimnion concentrations of nitrate generally increased in the November sample (Table 3.9) over the October sample period reaching a high of 0.131 mg/l in the Windy Bay Deep sample station. Nitrite, the form of nitrogen found in the smallest quantities were all below the detection limit in the epilimnion and hypolimnion for both samples (Tables 3.10 and 3.11) at all thirteen stations. All data measured below the detection limit were recorded as half the detection limit.

Secchi disk readings were taken at each of the thirteen stations throughout the year and they were used to determine the euphotic zone depth. Graphs showing the measured secchi disk readings and the empirically derived euphotic zone depth are located in Appendix B. The empirically derived euphotic zone depth was variable throughout the lake (Table 3.12) with each station having different depths based on variable site-specific conditions. Similarities existed between the five distinct habitat areas, however, the general trend was decreasing secchi and euphotic zone depths in a north to south direction within the lake.

Chlorophyll$_a$ values ranged from 0.005 μg/l to 25.790 μg/l (Table 3.13) in the epilimnion while values ranged from 0.005 μg/l to 34.14 μg/l (Table 3.14) in the hypolimnion. The general trend is increasing values in a north to south direction. Higher levels of chlorophyll$_a$ is an indicator of increasing trophic status.

Table 3.4 Turbidity (NTU) results from the epilimnion taken at thirteen stations on Coeur d'Alene Lake, Idaho.

		Date			
Nutrients	Location	8/13/97	9/16/97	10/20/97	11/4/97
Turbidity	Rockford Bay Upper	0.350	0.300	0.270	0.240
	Windy Bay Shallow Upper	0.630	0.330	0.270	0.250
	Windy Bay Deep Upper	0.280	0.400	0.230	0.270
	Coeur d'Alene River Upper	0.870	0.510	0.510	0.430
	Mid Lake Upper	0.330	1.990	0.840	0.380
	Carey Bay Upper	0.560	0.840	0.880	0.490
	Conkling Point Upper	0.540	0.760	0.760	0.860
	Hidden Lake Upper	4.760	1.560	0.960	1.420
	Round Lake	3.820	0.450	1.880	0.930
	Chatcolet Lake Upper	1.010	1.390	1.080	1.610
	Chatcolet Lake Shallow	3.690	0.770	2.010	11.200
	Benewah Lake Upper	5.810	1.550	1.600	-
	St. Joe River Upper	-	0.620	1.87	7.860

- No sample taken to lab.

Table 3.5 Turbidity (NTU) results from the hypolimnion taken at thirteen stations on Coeur d'Alene Lake, Idaho.

			Date		
Nutrients	Location	8/13/97	9/16/97	10/20/97	11/4/97
Turbidity	Rockford Bay Lower	0.600	0.370	0.240	0.270
	Windy Bay Shallow Lower	0.920	0.420	0.280	0.850
	Windy Bay Deep Lower	0.860	0.870	0.670	0.740
	Coeur d'Alene River Lower	1.020	0.510	0.850	0.880
	Mid Lake Lower	1.300	0.820	1.130	0.760
	Carey Bay Lower	0.560	0.840	0.880	0.490
	Conkling Point Lower	1.870	2.000	0.920	1.010

Hidden Lake Lower	1.310	3.60	1.060	1.390
Chatcolet Lake Lower	3.520	1.900	2.630	3.680
St. Joe River Lower	-	0.760	1.830	7.680

- No sample taken to lab.

Table 3.6 Ortho-Phosphate (mg/L) results from the epilimnion taken at thirteen stations on Coeur d'Alene Lake, Idaho.

		Date	
Nutrients	Location	10/20/97	11/4/97
Ortho-Phosphate	Rockford Bay Upper	0.013	0.013
	Windy Bay Shallow Upper	0.013	0.013
	Windy Bay Deep Upper	0.013	0.013
	Coeur d'Alene River Upper	0.013	0.013
	Mid Lake Upper	0.013	0.013
	Carey Bay Upper	0.013	0.013
	Conkling Point Upper	0.013	0.013
	Hidden Lake Upper	0.013	0.013
	Round Lake	0.013	0.013
	Chatcolet Lake Upper	0.013	0.013
	Chatcolet Lake Shallow	0.013	0.013
	Benewah Lake Upper	0.013	-
	St. Joe River Upper	0.013	0.013

- No sample taken to lab.

Table 3.7 Phosphate (mg/L) results from the hypolimnion taken at thirteen stations on Coeur d'Alene Lake, Idaho.

		Date	
Nutrients	Location	10/20/97	11/4/97
Phosphate	Rockford Bay Lower	0.013	0.013
	Windy Bay Shallow Lower	0.0013	0.013
	Windy Bay Deep Lower	0.013	0.013
	Coeur d'Alene River Lower	0.013	0.013
	Mid Lake Lower	0.013	0.013
	Carey Bay Lower	0.013	0.013
	Conkling Point Lower	0.013	0.013
	Hidden Lake Lower	0.013	0.013
	Chatcolet Lake Lower	0.013	0.013
	St. Joe River Lower	0.013	0.013

Table 3.8 Nitrate (mg/L) results from the epilimnion taken at thirteen stations on Coeur d'Alene Lake, Idaho.

		Date	
Nutrients	Location	10/20/97	11/4/97
Nitrate	Rockford Bay Upper	0.113	0.053
	Windy Bay Shallow Upper	0.003	0.059
	Windy Bay Deep Upper	0.003	0.053
	Coeur d'Alene River Upper	0.003	0.003
	Mid Lake Upper	0.003	0.003
	Carey Bay Upper	0.003	0.003
	Conkling Point Upper	0.003	0.003
	Hidden Lake Upper	0.003	0.003
	Round Lake	0.003	0.067
	Chatcolet Lake Upper	0.003	0.003
	Chatcolet Lake Shallow	0.003	0.043
	Benewah Lake Upper	0.003	-
	St. Joe River Upper	0.003	0.066

- No sample taken to lab.

Table 3.9 Nitrate (mg/L) results from the hypolimnion taken at thirteen stations on Coeur d'Alene Lake, Idaho.

		Date	
Nutrients	Location	10/20/97	11/4/97
Nitrate	Rockford Bay Lower	0.003	0.050
	Windy Bay Shallow Lower	0.003	0.063
	Windy Bay Deep Lower	0.131	0.075
	Coeur d'Alene River Lower	0.003	0.101
	Mid Lake Lower	0.054	0.128
	Carey Bay Lower	0.003	0.003
	Conkling Point Lower	0.003	0.125
	Hidden Lake Lower	0.003	0.003
	Chatcolet Lake Lower	0.003	0.003

St. Joe River Lower	0.003	0.003

Table 3.10 Nitrite results (mg/L) from the epilimnion taken at thirteen stations on Coeur d’Alene Lake, Idaho.

Nutrients	Location	Date 10/20/97	11/4/97
Nitrite	Rockford Bay Upper	0.013	0.013
	Windy Bay Shallow Upper	0.013	0.013
	Windy Bay Deep Upper	0.013	0.013
	Coeur d’Alene River Upper	0.013	0.013
	Mid Lake Upper	0.013	0.013
	Carey Bay Upper	0.013	0.013
	Conkling Point Upper	0.013	0.013
	Hidden Lake Upper	0.013	0.013
	Round Lake	0.013	0.013
	Chatcolet Lake Upper	0.013	0.013
	Chatcolet Lake Shallow	0.013	0.013
	Benewah Lake Upper	0.013	-
	St. Joe River Upper	0.013	0.013

- No sample taken to lab.

Table 3.11 Nitrite (mg/L) results from the hypolimnion taken at thirteen stations on Coeur d’Alene Lake, Idaho.

Nutrients	Location	Date 10/20/97	11/4/97
Nitrite	Rockford Bay Lower	0.013	0.013
	Windy Bay Shallow Lower	0.013	0.013
	Windy Bay Deep Lower	0.013	0.013
	Coeur d’Alene River Lower	0.013	0.013
	Mid Lake Lower	0.013	0.013
	Carey Bay Lower	0.013	0.013
	Conkling Point Lower	0.013	0.013
	Hidden Lake Lower	0.013	0.013
	Chatcolet Lake Lower	0.013	0.013
	St. Joe River Lower	0.013	0.013

Table 3.12 Average annual and seasonal secchi measurements taken at thirteen stations on Coeur d' Alene Lake in 1997. Euphotic zone depths were empirically derived using the regression equation EZD=2.2302+1.4914(SD)R^2=.78 published by Alaska Fish and Game 1987. All measurements are in meters.

Location	Station Depth	Annual Secchi[a]	Average Annual Euphotic Zone	Spring Seasonal Secchi[b]	Spring Seasonal Euphotic Zone	Summer Seasonal Secchi[c]	Summer Seasonal Euphotic Zone	Fall Seasonal Secchi[d]	Fall Seasonal Euphotic Zone
Round Lake	1.50	1.27	Bottom (1.5)[e]	1.20	Bottom (1.5)	1.31	Bottom (1.5)	1.23	Bottom (1.5)
Chatcolet Shallow	1.50	.89	Bottom (1.5)	1.00	Bottom (1.5)	0.87	Bottom (1.5)	0.77	Bottom (1.5)
Rockford Bay	13.00	5.29	10.11	153	4.50	6.43	11.81	7.63	13.61
Windy Bay Shallow	14.00	4.58	9.05	1.66	4.71	5.37	10.24	6.60	12.07
Carey Bay	12.00	4.10	8.34	1.73	4.80	5.13	9.87	4.87	9.48
Windy Bay Deep	33.00	5.44	10.35	1.75	4.84	6.77	12.33	7.27	13.07
Mid Lake	18.00	4.08	8.31	1.74	4.82	5.00	9.68	5.03	9.73
Conkling Point	16.00	3.44	7.36	1.43	4.36	4.16	8.43	4.47	8.89
Hidden Lake	8.00	3.02	6.81	1.58	4.65	3.94	8.18	2.80	6.48
Chatcolet Lake	11.50	2.56	6.04	1.65	4.69	3.01	6.73	2.70	6.26
Benewah Lake	4.50	2.42	5.84	1.60	4.62	2.96	6.64	2.20	5.51
Coeur d'Alene River	10.00	3.92	8.08	1.50	4.47	4.73	9.28	5.27	10.08
St. Joe River	12.50	2.25	5.58	1.08	3.83	3.18	6.98	1.93	5.11

[a] Average annual secchi was calculated from April 18, 1997 to November 4, 1997.
[b] Annual Spring secchi is from April 18, 1997 to June 11, 1997.
[c] Annual Summer secchi is from June 26, 1997 to September 17, 1997.
[d] Annual Fall secchi is from September 29, 1997 to November 4, 1997.
[e] Numbers in parenthesis represent the bottom in meters.

Table 3.13 Chlorophyll$_a$ (µg/L) results from the epilimnion taken at thirteen stations on Coeur d'Alene Lake, Idaho.

Nutrients	Location	Date 8/13/97	9/16/97	10/20/97	11/4/97[a]
Chlorophyll$_a$	Rockford Bay Upper	0.005	0.700	0.005	3.300
	Windy Bay Shallow Upper	0.005	0.005	0.740	2.140
	Windy Bay Deep Upper	0.005	1.340	2.230	1.380
	Coeur d'Alene River Upper	0.650	0.005	-	2.960
	Mid Lake Upper	1.420	0.640	1.900	2.910
	Carey Bay Upper	0.640	0.005	-	1.280
	Conkling Point Upper	0.005	2.160	1.380	3.390
	Hidden Lake Upper	0.005	Contaminated	3.620	6.890
	Round Lake	0.005	1.540	0.670	0.640
	Chatcolet Lake Upper	3.140	2.810	4.260	7.660
	Chatcolet Lake Shallow	5.320	4.890	2.780	0.690
	Benewah Lake Upper	0.640	25.790	3.540	-
	St. Joe River Upper	-	Contaminated	1.400	0.005

- No sample taken to lab.
[a] Coeur d' Alene Lake was isothermal.

Table 3.14 Chlorophyll$_a$ (µg/L) results from the hypolimnion taken at thirteen stations on Coeur d'Alene Lake, Idaho.

Nutrients	Location	Date 8/13/97	9/16/97	10/20/97	11/4/97[a]
Chlorophyll$_a$	Rockford Bay Lower	1.400	2.090	-	-
	Windy Bay Shallow Lower	2.140	0.680	-	-
	Windy Bay Deep Lower	0.640	0.680	0.005	-
	Coeur d'Alene River Lower	0.690	1.320	0.005	-
	Mid Lake Lower	0.690	2.070	1.380	-
	Carey Bay Lower	0.005	1.330	1.400	-
	Conkling Point Lower	0.005	1.370	0.005	-
	Hidden Lake Lower	11.920	20.250	1.980	-
	Chatcolet Lake Lower	6.030	Contaminated	14.04	-

Benewah Lake Lower	34.14	28.78	-	-
St. Joe River Lower	-	0.700	0.005	-

- No sample taken to lab.
[a] Coeur d' Alene Lake was isothermal.

3.1.2 Fisheries

From 1994-1997 Coeur d'Alene Lake was sampled using electrofishing (n= 8280) and gillnetting (n=1211) methods, primarily from April- October each year. Both the littoral and limnetic zones were sampled. Eighteen of the twenty-one species of fish known to occur in the lake were captured. Electrofishing efforts were focused in the littoral zone while gillnetting efforts were focused primarily in the limnetic zone, however, some gillnetting effort was focused in the littoral zones as well.

Relative abundance estimates derived from electrofishing data show that 61.89% of the catch consisted of introduced species, with yellow perch and largemouth bass being the most abundant (Table 3.15). Yellow perch were the most abundant introduced species in each of the four years sampled. Native fishes comprised only 38.11% of the catch, with largescale suckers being the most abundant. Largescale suckers were the most abundant native species in each of the individual sample seasons. Cutthroat trout only comprised 0.83% of the catch from 1994-1997. Of the 69 cutthroat trout caught in the littoral zone between 1994-1997, 47 were captured at night and only 22 were captured during the day.

Table 3.15 Electrofishing relative abundance from 1994-1997.

	1994		1995		1996		1997		1994-1997
Species	(n=1418)	Species	(n=1727)	Species	(n=536)	Species	(n=4599)	Species	(n=8280)
YP	25.88% (367)	LSS	27.74% (479)	LSS	28.92% (155)	LSS	28.55% (1313)	LSS	27.27% (2258)
LSS	21.93% (311)	YP	26.52% (458)	YP	22.01% (118)	YP	22.94% (1055)	YP	24.13% (1998)
LMB	18.55% (263)	LMB	13.20% (228)	PSS	15.30% (82)	PSS	10.55% (485)	LMB	11.92% (987)
SQW	10.65% (151)	PSS	10.48% (181)	SQW	15.11% (81)	LMB	09.92% (456)	PSS	10.28% (851)
PSS	07.26% (103)	SQW	06.89% (119)	LMB	07.46% (40)	SQW	09.35% (430)	SQW	09.43% (781)
BC	06.63% (94)	BBH	05.19% (102)	BC	04.66% (25)	BC	08.52% (392)	BC	06.87% (569)
TCH	02.40% (34)	TCH	04.17% (72)	TCH	02.99% (16)	BBH	04.02% (185)	BBH	04.01% (332)
BBH	02.19% (31)	BC	03.36% (58)	BBH	02.61% (14)	TCH	03.50% (161)	TCH	03.42% (283)
PIK	01.48% (21)	CTT	0.75% (13)	PIK	0.56% (3)	CTT	0.78% (36)	CTT	0.83% (69)
CTT	01.27% (18)	MWF	0.41% (7)	CTT	0.37% (2)	PIK	0.50% (23)	PIK	0.58% (48)
KOK	01.13% (16)	SCP	0.29% (5)	BLT	0	SCP	0.43% (20)	KOK	0.41% (34)
SCP	0.49% (7)	KOK	0.17% (3)	CCF	0	KOK	0.33% (15)	SCP	0.39% (32)
MWF	0.07% (1)	BLT	0.06% (1)	CHN	0	CHN	0.30% (14)	MWF	0.18% (15)
CCF	0.07% (1)	PIK	0.06% (1)	KOK	0	MWF	0.15% (7)	CHN	0.17% (14)
SMB	0	CCF	0	MWF	0	CCF	0.09% (4)	CCF	0.06% (5)
RBT	0	CHN	0	RBT	0	SMB	0.04% (2)	SMB	0.02% (2)
CHN	0	RBT	0	SCP	0	RBT	0.02% (1)	RBT	0.01% (1)
BLT	0	SMB	0	SMB	0	BLT	0	BLT	0.01% (1)

Relative abundance estimates derived from gillnetting data show 57.89% of the fish captured were introduced species (Table 3.16). Native fishes comprised only 42.11% of the catch of which cutthroat trout comprised 0.91%. These data show that nine species of fish were more abundant than cutthroat trout lakewide. However, cutthroat trout were the fourth most abundant species in locations where they were captured. In nearly all transects where cutthroat trout were captured, kokanee salmon were the most abundant species, followed by northern squawfish and largescale suckers.

Largescale suckers and northern squawfish thrive throughout the lake. They do just as well in both the limnetic and littoral zones of the lake. Most of the other introduced species are primarily limited to the littoral zone of the lake, the area most influenced by construction of Post Falls dam. Kokanee salmon appear to be the introduced species that most effectively thrive in the limnetic zones of the lake. Chinook salmon are also found primarily in the limnetic zones, however, they are less susceptible to the capture methods that we utilized for this report.

Cutthroat trout captured in the littoral zone were found primarily in habitat associated with steep, rocky shorelines where few aquatic macrophytes exist. Of the thirty-six cutthroat trout captured in 1997, sixteen were caught in inundated riverine habitat or in reaches near mouths of tributaries where spawning is known to occur. Cutthroat trout caught in the limnetic zone were captured in nets set in locations greater than ten meters deep.

Analysis of the CPUE (Tables 3.17 and 3.18) data shows wide fluctuations from year to year. Every attempt was made to standardize gear and methods in 1997. Future estimates should contain less bias and more accurately reflect actual stock densities.

Results from the water quality component of the HSI model indicated that there is suitable habitat for cutthroat trout in the lake (Table 3.19). The quantity of suitable habitat, however, decreases as water temperature increases during the year. The suitability index was poor or very poor (<0.25) in the shallow portion of the water column at all sample stations. While water quality does not directly exclude cutthroat trout from these shallow areas, unsuitable habitat exerts added stress on cutthroat trout making foraging runs into the upper 10 meters of the water column.

3.2 Stream Studies

3.2.1 Water Quality

Lake Creek

Water temperature measured at the lower Lake Creek station indicated a maximum of 24° C on July 21, 1997. The maximum 7-day moving average at the same station exceeded 16° C through most of June and all of July. Daily temperature fluctuations ranged from 4.7° C to 7.8° C during July, indicating that substantial cooling did take place. A gap in data from late July to October due to equipment failure probably missed continued temperature pollution problems, as stream temperatures generally do not begin cooling until late August. Temperatures recorded at the upper Lake Creek station are considerably lower. The maximum 7-day moving average exceeded 16° C from August 1-20, while the daily maximum exceeded 18° C only once (8-6-97). Dissolved oxygen did not drop below 9 mg/l at the lower station, where the highest temperatures were recorded. Measured base flows ranged from 3.8 to 7.9 cfs from July 1 through August 9.

Benewah Creek

A maximum temperature of 24° C was recorded at the 9 mile station on August 6, 1997. The maximum 7-day moving average exceeded 16° C from mid June through mid September and minimum temperature did not fall below 16° C for 15 days during this period. Dissolved oxygen was less than 9 mg/l during the period of highest water temperatures, but did not drop below 7.6 mg/l. Discharge at the 3 mile station ranged from 2.9 to 3.9 cfs from mid August through September.

Water quality conditions in the tributaries varied greatly, but in general provided more suitable water temperatures than mainstem reaches. Temperature did not exceed 16° C in S.F. Benewah Creek and dissolved oxygen did not drop below 9 mg/l. Discharge, however, was less than 1.0 cfs from mid August

Table 3.16 Electroshocking catch per unit effort from 1994-1997.

1994			1995			1996			1997			1994-1997		
		Time/hr			Time/hr			Time/hr			Time/Hr			Time/Hr
Species	(n=1418)	**20.93**	Species	(n=1727)	**24.89**	Species	(n=536)	**12.0**	Species	(n=4599)	**42.45**	Species	(n=8280)	**100.27**
YP	367	17.53	LSS	479	19.24	LSS	157	13.08	LSS	1313	30.93	LSS	2258	22.52
LSS	311	14.86	YP	458	18.40	YP	123	10.25	YP	1055	24.85	YP	1998	19.93
LMB	263	12.57	LMB	228	9.16	SQW	86	7.17	PSS	485	11.43	PSS	987	9.84
SQW	151	7.21	PSS	181	7.27	PSS	82	6.83	LMB	456	10.74	LMB	851	8.49
PSS	103	4.92	SQW	119	4.78	LMB	41	3.42	SQW	430	10.13	SQW	781	7.79
BC	94	4.49	BBH	102	4.10	BC	25	2.08	BC	392	9.23	BC	569	5.67
TCH	34	1.62	TCH	72	2.89	BBH	19	1.58	BBH	185	4.36	BBH	332	3.31
BBH	31	1.48	BC	58	2.33	TCH	16	1.33	TCH	161	3.79	TCH	283	2.82
PIK	21	1.00	CTT	13	0.52	PIK	3	0.25	CTT	36	0.85	CTT	69	0.69
CTT	18	0.86	MWF	7	0.28	CTT	2	0.17	PIK	23	0.54	PIK	48	0.48
KOK	16	0.76	SCP	5	0.20	BLT	0	0.00	SCP	20	0.47	KOK	34	0.34
SCP	7	0.33	KOK	3	0.12	CCF	0	0.00	KOK	15	0.35	SCP	32	0.32
CCF	1	0.05	BLT	1	0.04	CHN	0	0.00	CHN	14	0.33	MWF	15	0.15
MWF	1	0.05	PIK	1	0.04	KOK	0	0.00	MWF	7	0.16	CHN	14	0.14
BLT	0	0.00	CCF	0	0.00	MWF	0	0.00	CCF	4	0.09	CCF	5	0.05
CHN	0	0.00	CHN	0	0.00	RBT	0	0.00	SMB	2	0.05	SMB	2	0.02
RBT	0	0.00	RBT	0	0.00	SCP	0	0.00	RBT	1	0.02	RBT	1	0.01
SMB	0	0.00	SMB	0	0.00	SMB	0	0.00	BLT	0	0.00	BLT	1	0.01

Table 3.17 Gillneting relative abundance from 1994-1997.

1994		1995		1996		1997		1994-1997	
Species	(n=211)	Species	(n=78)	Species	(n=286)	Species	(n=636)	Species	(n=1211)
YP	63.51% (134)	YP	65.38% (51)	LSS	41.96% (120)	YP	34.28% (218)	YP	40.71% (493)
SQW	16.11% (34)	SQW	20.51% (16)	YP	31.47% (90)	LSS	21.23% (135)	LSS	23.45% (284)
LSS	09.00% (19)	LSS	12.82% (10)	SQW	16.08% (46)	SQW	18.55% (118)	SQW	17.67% (214)
BBH	02.84% (6)	BBH	01.28% (1)	BBH	02.45% (7)	KOK	10.06% (64)	KOK	06.28% (76)
KOK	02.84% (6)	BC	0	KOK	02.10% (6)	BBH	07.39% (47)	BBH	05.04% (61)
PSS	01.90% (4)	BLT	0	PIK	01.40% (4)	BC	02.52% (16)	BC	01.57% (19)
PIK	01.42% (3)	CCF	0	TCH	01.40% (4)	CTT	01.42% (9)	TCH	01.16% (14)
TCH	0.95% (2)	CHN	0	CCF	01.05% (3)	TCH	01.26% (8)	PSS	01.07% (13)
BC	0.47% (1)	CTT	0	PSS	01.05% (3)	PSS	0.94% (6)	PIK	0.99% (12)
CTT	0.47% (1)	KOK	0	BC	0.70% (2)	CHN	0.79% (5)	CTT	0.91% (11)
LMB	0.47% (1)	LMB	0	CTT	0.35% (1)	PIK	0.79% (5)	CCF	0.58% (7)
BLT	0	MWF	0	BLT	0	CCF	0.63% (4)	CHN	0.41% (5)
CCF	0	PIK	0	CHN	0	MWF	0.16% (1)	MWF	0.08% (1)
CHN	0	PSS	0	LMB	0	BLT	0	LMB	0.08% (1)
MWF	0	RBT	0	MWF	0	LMB	0	SMB	
RBT	0	SCP	0	RBT	0	RBT	0	SCP	
SCP	0	SMB	0	SCP	0	SCP	0	RBT	
SMB	0	TCH	0	SMB	0	SMB	0	BLT	

Table 3.18 Gillneting catch per unit effort from 1994-1997.

1994			1995			1996			1997			1994-1997		
Species	(n=211)	**69**	Species	(n=78)	**79**	Species	(n=286)	**170.50**	Species	(n=636)	**677**	Species	(n=1211)	**995.50**
YP	134	1.94	YP	51	0.65	LSS	120	0.70	YP	218	0.32	YP	493	0.50
SQW	34	0.49	SQW	16	0.20	YP	90	0.53	LSS	135	0.20	LSS	284	0.29
LSS	19	0.28	LSS	10	0.13	SQW	46	0.27	SQW	118	0.17	SQW	214	0.21
BBH	6	0.09	BBH	1	0.01	BBH	7	0.04	KOK	64	0.09	KOK	76	0.08
KOK	6	0.09	BC	0	0.00	KOK	6	0.04	BBH	47	0.07	BBH	61	0.06
PSS	4	0.06	BLT	0	0.00	PIK	4	0.02	BC	16	0.02	BC	19	0.02
PIK	3	0.04	CCF	0	0.00	TCH	4	0.02	CTT	9	0.01	CTT	11	0.01
TCH	2	0.03	CHN	0	0.00	CCF	3	0.02	TCH	8	0.01	TCH	14	0.01
BC	1	0.01	CTT	0	0.00	PSS	3	0.02	PSS	6	0.01	PSS	13	0.01
CTT	1	0.01	KOK	0	0.00	BC	2	0.01	CHN	5	0.01	CHN	5	0.01
LMB	1	0.01	LMB	0	0.00	CTT	1	0.01	PIK	5	0.01	PIK	12	0.01
BLT	0	0.00	MWF	0	0.00	BLT	0	0.00	CCF	4	0.01	CCF	7	0.01
CCF	0	0.00	PIK	0	0.00	CHN	0	0.00	MWF	1	0.00	MWF	1	0.00
CHN	0	0.00	PSS	0	0.00	LMB	0	0.00	BLT	0	0.00	BLT	0	0.00
MWF	0	0.00	RBT	0	0.00	MWF	0	0.00	LMB	0	0.00	LMB	1	0.00
RBT	0	0.00	SCP	0	0.00	RBT	0	0.00	RBT	0	0.00	RBT	0	0.00
SCP	0	0.00	SMB	0	0.00	SCP	0	0.00	SCP	0	0.00	SCP	0	0.00
SMB	0	0.00	TCH	0	0.00	SMB	0	0.00	SMB	0	0.00	SMB	0	0.00

Table 3.19 Habitat suitability index for lucustrine Cutthroat Trout based on water quality.

Location	Depth	HSI[a]		Suitability Index
Rockford Bay	0-7 Meters	$(0.25x1x1)^{1/3}$	=	0.25 SI
	7-11 Meters	$(0.60x1x1)^{1/3}$	=	0.845 SI
	11-Bottom (14)[b]	$(1x1x1)^{1/3}$	=	1.0 SI
Windy Bay Shallow	0-7 Meters	$(0.0x1x1)^{1/3}$	=	0.0 SI
	7-10 Meters	$(0.85x1x1)^{1/3}$	=	0.94 SI
	10-Bottom (15)	$(1x1x1)^{1/3}$	=	1.0 SI
Windy Bay Deep	0-10 Meters	$(0.0x1x1)^{1/3}$	=	0.0 SI
	10-15 Meters	$(0.85x1x1)^{1/3}$	=	0.94 SI
	15-Bottom (33)	$(1x1x1)^{1/3}$	=	1.0 SI
Coeur d'Alene River	0-Bottom	$(0.0x1x1)^{1/3}$	=	0.0 SI
Mid-Lake Coeur d'Alene	0-10 Meters	$(0.0x1x1)^{1/3}$	=	0.0 SI
	10-13 Meters	$(0.85x1x1)^{1/3}$	=	0.94 SI
	13-Bottom (17)	$(1x1x1)^{1/3}$	=	1.0 SI
Carey Bay	0-10 Meters	$(0.0x1x1)^{1/3}$	=	0.0 SI
	10-12 Meters	$(0.85x1x1)^{1/3}$	=	0.94 SI
	12-Bottom (13)	$(1x1x1)^{1/3}$	=	1.0 SI
Conkling Park	0-10 Meters	$(0.0x1x1)^{1/3}$	=	0.0 SI
	10-13 Meters	$(0.85x1x1)^{1/3}$	=	0.94 SI
	13-Bottom (16)	$(1x1x1)^{1/3}$	=	1.0 SI
Hidden Lake	0-5 Meters	$(0.0x1x1)^{1/3}$	=	0.0 SI
	5-7 Meters	$(0.8x1x1)^{1/3}$	=	0.92 SI
	7-Bottom (10)	$(1x0.0x1)^{1/3}$	=	0.0 SI
Round Lake	0-Bottom (1.5)	$(0.0x1x1)^{1/3}$	=	0.0 SI
Chatcolet Lake	0-6 Meters	$(0.0x1x1)^{1/3}$	=	0.0 SI
	6-9 Meters	$(0.85x1x1)^{1/3}$	=	0.94 SI
	9-Bottom (11)	$(1x0.0x1)^{1/3}$	=	0.0 SI
Chatcolet Shallow	0-Bottom (1.5)	$(0.0x1x1)^{1/3}$	=	0.0 SI
Benewah Lake	0-Bottom (4.5)	$(0.0x1x1)^{1/3}$	=	0.0 SI
St. Joe River	0-Bottom (12.5)	$(0.4x1x1)^{1/3}$	=	0.4 SI

[a] Habitat Suitability Index (HSI).
[b] Numbers in parenthesis represent the bottom in meters.

through early October. Measured water temperatures in W.F. Benewah Creek exceeded 16° C only once in early August and dissolved oxygen did not decrease below 9 mg/l. School House Creek was also a source of cold water and the maximum 7-day moving average exceeded 16° C for only 5 days in August. There were periods where habitat consisted of stagnant pools from July through August and dissolved oxygen decreased from 6.8 to 3.2 mg/l during this time. The maximum 7-day moving average in Windfall Creek exceeded 16° C from mid June through mid September and exceeded 20° C for 40 days. A maximum temperature of 27° C was recorded on August 6. Daily temperature fluctuations were as high as 9.4° C in August and minimum temperature did not drop below 16° C for 9 days. There was no flow in Windfall Creek from late July through August and dissolved oxygen dropped below 9 mg/l during this period.

Evans Creek

Maximum water temperature was 17° C on August 6, 1997. The maximum 7-day moving average exceeded 16° C for 8 days in August. Dissolved oxygen did not drop below 9 mg/l during the period of highest water temperatures. Measured base flows ranged from 2.7 to 4.5 cfs from mid-August through early October.

Alder Creek

Maximum water temperature was 22° C on August 6, 1997. The maximum 7-day moving average exceeded 16° C from mid July through early September. Dissolved oxygen did not drop below 9 mg/l during the period of highest water temperatures. Measured base flows ranged from 1.8 to 0.3 cfs from July through September.

3.2.2 Habitat Suitability Indices

The suitability index (SI) values for individual water quality parameters vary considerably between sample locations (Table 3.20). The greatest variability occurs for the temperature parameter (V_1), where the SI ranges from 0 to 1.0. Water temperatures are limiting for the mainstem of Benewah Creek, lower Lake Creek, and lower Windfall Creek. The SI for the base flow parameter (SI_{14}) is < 0.4 for all sample locations except for Evans Creek and mainstem Benewah Creek, indicating that base flow is also a limiting factor at most locations. The SI for dissolved oxygen (SI_3) and pH (SI_{13}) are generally greater than 0.8, and therefore are not considered limiting. The exception occurs in School House Creek where dissolved oxygen is limiting (SI_3=0.3) during the period of warmest water temperatures.

Table 3.20 Habitat Suitability Index (HSI) calculations for riverine cutthroat trout.

Location	V1	SI1	V3	SI3	V13	SI13	V14	SI14	Comp HSI	Non-Comp HSI
L. Lake	22.6	0	9.5	1	6.8/7.7	1	9	0.2	0.00	0
U. Lake	17.9	0.78	7.9	0.9	6.5/7.5	1	13	0.25	0.65	0.25
L. Benewah	23	0	8.9	1	7.0/8.3	1	18	0.4	0.00	0
U. Benewah	22.8	0	7.7	0.87	6.7/7.6	1	18	0.4	0.00	0
S.E. Benewah	14.7	1	9.7	1	6.6/7.6	1	16	0.32	0.75	0.32
School House	16.4	0.92	5.7	0.3	6.8/7.4	1	6	0.15	0.45	0.15
W.F. Benewah	16.6	0.9	9.3	1	6.7/7.5	1	11	0.25	0.69	0.25
Windfall	25.1	0	7.8	0.89	6.7/7.6	1	13	0.25	0.00	0
Evans	16.4	0.92	9.6	1	6.3/7.7	0.95	28	0.6	0.85	0.6
Alder	20.6	0.45	9.6	1	6.8/7.8	1	16	0.32	0.62	0.32

HSI scores that are calculated using the non-compensatory method show a very poor to poor rating for all sample locations, with the exception of Evans Creek, which is considered good. In other words, when habitat suitability is rated based on water quality parameters alone, then all sample locations, with the exception of Evans Creek, are rated very poor to poor with regard to cutthroat trout preferences. In six of ten locations, however, differences between HSI calculations using the compensatory versus non-compensatory method indicate that good habitat conditions have the potential to partially compensate for short-term degradation in water quality. These sites include upper Lake Creek, S.F. Benewah Creek, School House Creek, W.F. Benewah Creek, Evans Creek, and Alder Creek. Lower Lake Creek, the mainstem of Benewah Creek, and lower Windfall Creek are considered very poor regardless of the method used.

3.2.3 Fisheries

Abundance and Distribution

General patterns of cutthroat trout abundance and distribution vary among the target watersheds and among years, but seem to be highly correlated to seasonal changes in water quality and quantity. Cutthroat trout are sporadically distributed in the Lake Creek, Benewah Creek, and Alder Creek watersheds during both the summer and fall seasons (Tables 3.21 and 3.22). Abundance in the second order tributaries of Lake Creek and Benewah Creek are consistently much higher than in adjacent mainstem reaches, despite the effects of low flow conditions. During base flow conditions, for example, cutthroat trout have been known to crowd into small, isolated pools (>15 fish/m^2) located in cool tributaries, rather than face conditions of high water temperatures in mainstem reaches. In contrast, favorable water quality conditions in Evans Creek result in a relatively even distribution of cutthroat trout. Cutthroat trout abundance is consistently lowest in Alder Creek.

Surveys conducted in 1997 showed that cutthroat trout abundance increased dramatically during the fall sample period. Fall surveys were conducted following fry emergence, which occurs in late June to early July, and young of the year fish accounted for most of the seasonal variation in abundance within sites (Table 3.23). Young of the year fish were found principally in small tributaries, which supports the hypothesis that the majority of spawning activity takes place in second order streams in these watersheds.

Brook trout have been found only in Alder Creek and Benewah Creek; the respective dates of introduction are unknown. Fish are distributed in fairly high numbers (up to 30/100m^2) throughout the upper reaches of the Alder Creek watershed. Distribution in the Benewah Creek watershed is limited to the upper mainstem and a few of the primary tributaries and abundance is typically much lower than for cutthroat trout. In Alder Creek, however, brook trout are found in greater numbers than cutthroat trout in all but the lowermost stream reaches (Table 3.24).

Age and Growth

A total of 680 cutthroat trout scales were examined for age and growth determination in 1996 and 162 additional scales were examined in 1997. Growth and potential maximum size of cutthroat trout varies from stock to stock (Table 3.25). The adfluvial stocks found in Benewah Creek and Lake Creek exhibit the maximum growth potential for this species. Record size for Lake Creek cutthroat trout is 17.9 inches (456 mm TL) and 1.5 pounds (698 grams), caught in 1997. Record size for Benewah Creek cutthroat trout is 16.8 inches (427 mm TL) and 1.5 pounds (670 grams), caught in 1994. Maximum growth for resident fish stocks ranges from 222 to 280 mm total length and 102 to 180 grams. A complete tabular analysis of growth for cutthroat trout is provided in Appendix C.

Table 3.21 Cutthroat trout abundance and distribution by watershed, 1996.

Cutthroat Trout Lake Creek		Summer 96		Fall 96	
Tributary	**Reach**	**N±(SE)**	**#/100m2**	**N±(SE)**	**#/100m2**
Mainstem	1	1	0.5	1	0.3
	2	--	--	--	--
	3	--	--	--	--
	4	23	7.7	36(0.7)	12.1
	5	18	4.8	2	0.5
	6	31(0.4)	4.9	33(1.2)	3.9
	7	16	2.4	6	0.4
	8	7	4.2	0	0.0
West Fork		91(25.7)	16.9	6(0.8)	6.5
Bozard		25(0.3)	10.8	11	5.1
Totals		212(25.7)		83(2.5)	

Cutthroat Trout Evans Creek		Summer 96	
Tributary	**Reach**	**N±(SE)**	**#/100m2**
Mainstem	1	0	0.0
	2	18(0.9)	4.0
	3	4	1.5
	4	33(4.31)	4.9
	5	23(0.6)	10.3
	6	5	2.2
	7	30(4.1)	4.9
East Fork		6	10.8
Rainbow Fork		36(3.6)	19.4
South Fork		34(6.9)	12.2
Totals		189(9.9)	

Cutthroat Trout Benewah Creek		Summer 96		Fall 96	
Tributary	**Reach**	**N±(SE)**	**#/100m2**	**N±(SE)**	**#/100m2**
Mainstem	1	1	0.4	2.0	0.5
	2	5(1.5)	0.8	4.0	1.8
	3	14(0.3)	6.3	10	1.6
	4	5(1.0)	1.1	5(1.5)	1.5
	5	3	1.2	0	0.0
	7	--	--	7	0.9
	8	4	1.4	7	2.5
	9	12(4.2)	1.9	2	0.5
	10	14(0.6)	1.4	9	0.9
	11	3	1.2	0	0.0
South Fork		6	5.4	9(0.77)	8.1
Bull		25(0.6)	19.2	--	--
West Fork		28(1.4)	18.8	23(4.2)	10.3
Whitetail		33(0.4)	22.2	--	--
Windfall		27(0.85)	14.5	--	--
Totals		180(6.4)		78(4.5)	

Cutthroat Trout Alder Creek		Summer 96	
Tributary	**Reach**	**N±(SE)**	**#/100m2**
Mainstem	1	3	0.5
	2	0	0.0
	3	3	0.9
	4	1	0.3
	5	14(0.5)	2.1
	6	6	1.8
	7	21	2.7
	8	2	0.5
	9	1	0.2
North Fork	1	0	0.0
	2	0	0.0
	3	0	0.0
	4	2	2.7
Totals		53(0.5)	

Population estimates were not completed for Evans Creek or Alder Creek in 1996.

Table 3.22 Cutthroat trout abundance and distribution, 1997.

Lake Creek		Summer 97		Fall 97	
Tributary	Reach	N±(SE)	#/100m2	N±(SE)	#/100m2
Mainstem	1	0.0	0.0	2.0	1.8
	2	--	--	--	--
	3	--	--	--	--
	4	8.0	2.1	14(1.4)	3.7
	5	2.0	0.5	8.0	1.9
	6	3.0	0.4	8.0	1.4
	7	0.0	0.0	3.0	1.1
	8	0.0	0.0	20.0	9.0
Bozard		36(2.1)	12.1	78(1.7)	32.3
West Fork		14.0	4.7	93(3.6)	19.3
Totals		63(2.1)		224(6.7)	

Evans Creek		Summer 97		Fall 97	
Tributary	Reach	N±(SE)	#/100m2	N±(SE)	#/100m2
Mainstem	1	0	0.0	0	0.0
	2	6(1.0)	1.1	7	1.4
	3	2	1.0	7	1.9
	4	32(0.6)	6.6	68(6.8)	9.1
	5	26(1.4)	7.8	23(3.2)	5.4
	6	23(1.9)	8.3	30(3.3)	20.2
	7	30(0.9)	12.4	12(4.2)	25.8
E.F.Evans		5(1.0)	2.2	22(0.6)	29.6
R.F.Evans		--	--	21(5.1)	32.3
S.F.Evans		12(0.6)	7.2	26(3.0)	10.8
Totals		136(3.0)		216(11.0)	

Benewah Creek		Summer 97		Fall 97	
Tributary	Reach	N±(SE)	#/100m2	N±(SE)	#/100m2
Mainstem	1	0	0.0	0	0.0
	2	0	0.0	6	0.9
	3	1	0.2	19(0.69)	3.8
	4	0	0.0	2	0.5
	5	3	0.8	1	0.5
	8	0	0.0	2	0.4
	9	8	2.2	6	1.5
	10	3	2.7	4	1.1
	11	4	1.1	0	0.0
South Fork		1	0.5	13(1.41)	7.8
Bull		16(5.94)	8.6	18(1.43)	17.6
Coon		23(1.72)	11.8	51	34.3
School House		8(0.77)	6.6	6	5.4
West Fork		13(0.49)	10.0	48(1.26)	43.1
Whitetail		6.0	5.9	17	5.1
Windfall		20(0.73)	10.8	79(3.4)	42.5
Totals		106(2.7)		272(4.2)	

Alder Creek		Summer 97		Fall 97	
Tributary	Reach	N±(SE)	#/100m2	N±(SE)	#/100m2
Mainstem	1	3	0.5	1	0.1
	2	1	0.3	0	0.0
	3	3	0.8	0	0.0
	4	--	--	42(3.4)	10.8
	5	6	1.0	13	1.7
	6	3	1.6	0	0.0
	7	17	1.8	15(1.7)	1.3
	8	5	1.8	2	0.5
	9	11(2.9)	4.2	1	0.2
N.F.Alder	1	0	0.0	0	0.0
	2	0	0.0	0	0.0
	3	0	0.0	0	0.0
	4	0	0.0	0	0.0
Totals		49(2.9)		74(3.7)	

Table 3.23 Age frequency of cutthroat trout comparing summer and fall shocking results, 1997.

		AGE						
SEASON	**LOCATION**	**0**	**1**	**2**	**3**	**4**	**5**	**TOTAL**
SUMMER	ALDER	4	4	24	14	2		48
	BENEWAH		14	5	2			21
	BOZARD		10	4	9			23
	BULL		9	3	1			13
	COON	1	5	9	2	1	4	22
	E.F. BOZARD		7		4			11
	E.F.EVANS	2	3					5
	EVANS	2	26	43	38	7	1	117
	LAKE				10	3		13
	S.F.EVANS	1	4	7				12
	SCHOOL HOUSE		2	5	1			8
	W.F. BENEWAH		5	6	2			13
	W.F. LAKE		5	2	3	3	1	14
	WHITETAIL		5	1				6
	WINDFALL	4	14		2			20
Summer Total		14	113	109	88	16	6	346
FALL	ALDER	7	21	19	17	6		70
	BENEWAH		7	34	8	3		52
	BOZARD	27	13	8	7			55
	BULL	10	1	5	1			17
	COON	23	12	13	3			51
	E.F. BOZARD	1	8	7	5			21
	E.F.EVANS	14	1	7				22
	EVANS	11	25	51	24	13	9	133
	LAKE	1	11	7	14	13	8	54
	RAINBOW F.EVANS		6	8	3			17
	S.F.EVANS	1	13	5	4	1		24
	SCHOOL HOUSE			2	4			6
	W.F. BENEWAH	32	5	6	4			47
	W.F. LAKE	50	20	8	9	1	1	89
	WHITETAIL	5	2	7	3			17
	WINDFALL	52	17	6				75
Fall Total		234	162	193	106	37	18	750
Grand Total		248	275	302	194	53	24	1096

Table 3.24 Brook trout abundance and distribution in Benewah Creek and Alder Creek, summer 1997.

Benewah Creek				Alder Creek			
Tributary	Reach	N±(SE)	#/100m2	Tributary	Reach	N±(SE)	#/100m2
Mainstem	1	0	0.0	Mainstem	1	2	0.3
	2	0	0.0		2	1	0.3
	3	0	0.0		3	1	0.3
	4	0	0.0		4	--	--
	5	0	0.0		5	6	1.0
	8	0	0.0		6	8(2.9)	4.3
	9	0	0.0		7	42(3.6)	4.4
	10	2	1.8		8	22(3.1)	7.9
	11	2	0.5		9	27(1.1)	10.4
South Fork		2	1.0	N.F.Alder	1	45(5.7)	10.5
Bull		0	0.0		2	37(4.0)	15.3
Coon		0.0	0.0		3	44(5.1)	18.2
School House		0.0	0.0		4	9(2.1)	6.9
West Fork		5(1.5)	3.8	Totals		244(10.5)	
Whitetail		0	0.0				
Windfall		0	0.0				
Totals		11(1.5)					

Table 3.25. Mean back calculated lengths (mm) at age for cutthroat trout, 1996.

Location	**Age**							
	1+	**2+**	**3+**	**4+**	**5+**	**6+**	**7+**	**8+**
Alder	83	118	148	192				
Benewah	83	121	158	207	250	299	318	
Cherry	86	135	176	214	256	298		
Evans	84	124	163	207				
Lake	85	131	171	222	264	308	335	366

A total of 139 brook trout scales were examined for age and growth in 1996 and an additional 51 scales were examined in 1997. The growth potential for brook trout in Alder Creek and Benewah Creek is similar (Table 3.26). Record size for Alder Creek brook trout is 13.4 inches (340 mm TL) and 0.7 pounds (306 grams), caught in 1997. Record size for Benewah Creek is 14.9 inches (380 mm TL) and 1.5 pounds (700 grams). Brook trout have not been identified in the Lake Creek or Evans Creek watersheds. Complete tabular analyses of growth for brook trout are provided in Appendix C.

Table 3.26. Mean back calculated lengths (mm) at age for brook trout, 1996.

Location	**Age**				
	1+	**2+**	**3+**	**4+**	**5+**
Alder	84	120	151	198	227
Benewah	88	127	166	215	268

The linear regressions of body length versus age for cutthroat trout and brook trout are shown in figures 3.9 and 3.10. For the subject watersheds, between 75 and 96 percent of the total variation in body length is explained by age.

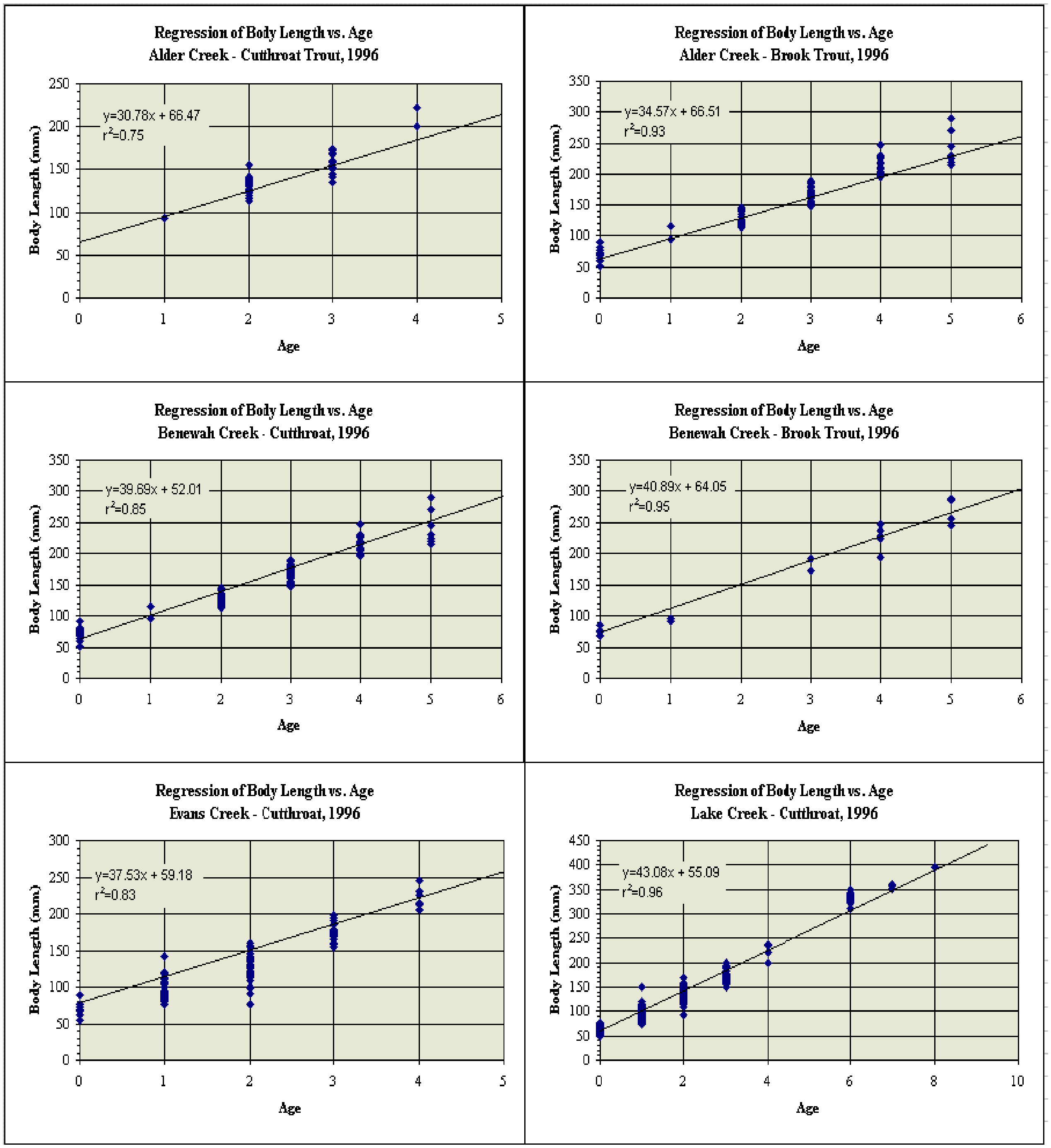


Figure 3.9 Regression equations of body length versus age for cutthroat and brook trout in the target watersheds, 1996.

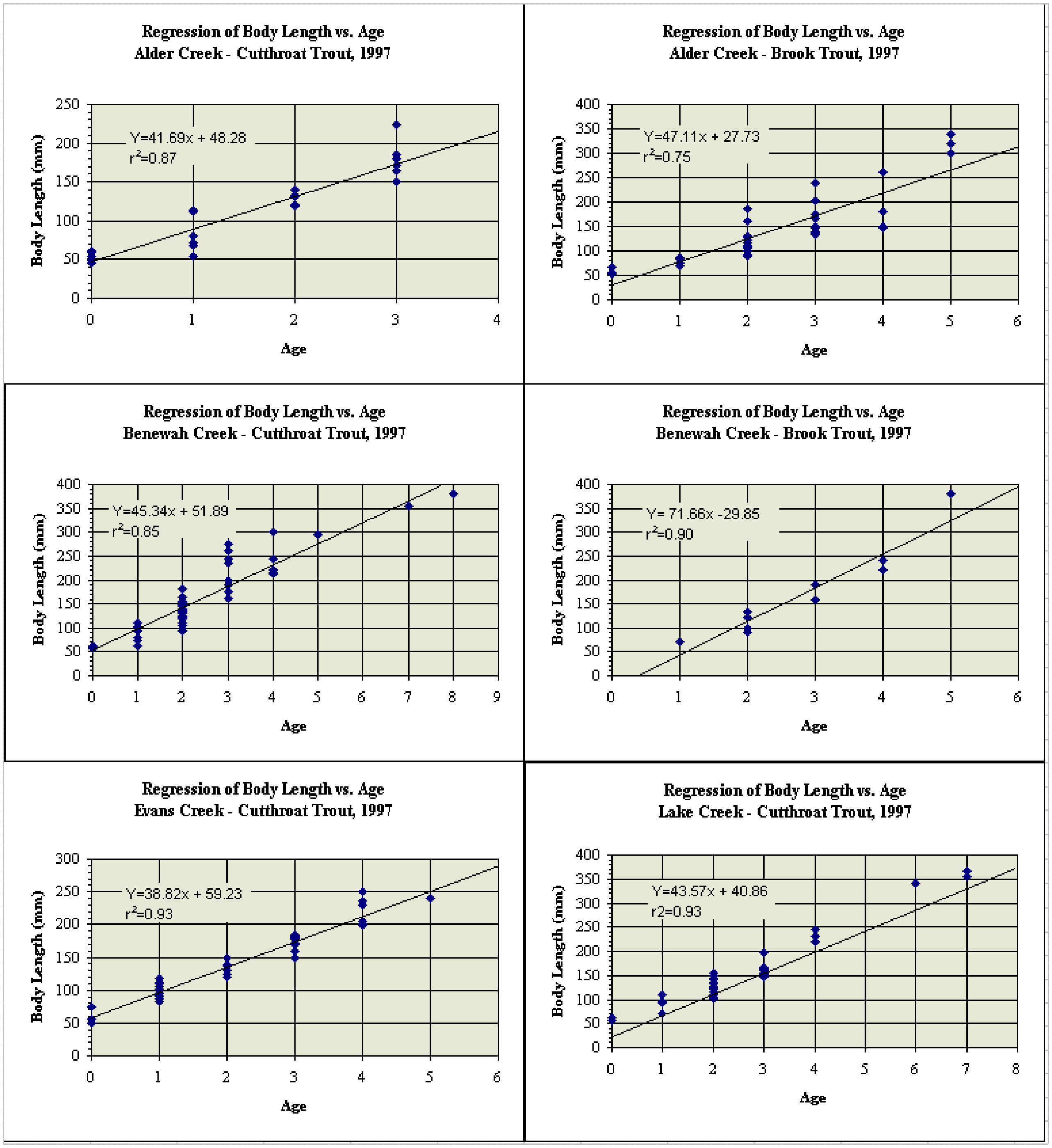


Figure 3.10 Regression equations of body length versus age for cutthroat and brook trout in the target watersheds, 1997.

Trout Migration

A total of 907 cutthroat trout were caught in the lower Lake Creek trap in 1996, while only 273 were caught in 1997 (Figure 3.11-3.12). Adult fish (age IV or older) accounted for 3 percent of the catch each year (Figure 3.11-3.12). Although total numbers varied considerably among years, catch per unit effort was similar (12.4 fish/day and 7.8 fish/day, respectively). Measured stream flows in excess of 150 cubic feet/second during the period April 16-30, 1997 reduced the effectiveness of trapping efforts and, in part, account for the lower numbers of trout during that year.

Trapping success in Benewah Creek for the years 1996-97 was considerably lower than in Lake Creek. Only one cutthroat trout was caught in 1996 (0.04 fish/day) while a total of 26 were caught in 1997 (0.7 fish/day). Adult fish (age IV or older) accounted for 27 percent of the catch in 1997. Above normal precipitation and runoff greatly reduced the effectiveness of trapping efforts.

Upstream migration of adult fish into Benewah Creek and Lake Creek was documented for the period March 6 through April 20, 1997. Average daily water temperature in Lake Creek increased from 1° C to 8° C (mean = 3.8° C) during the documented period of upstream migration and stream discharge ranged from 57 cfs to 784 cfs. Measurements of suspended sediment indicated that concentrations rarely exceeded 1,000 mg/L during the migratory period for cutthroat trout in Lake Creek (Bauer, 1998). These concentrations are considerably lower than those reported to cause avoidance in migrating salmonids (Cordone and Kelley 1961, Bell 1986). Residence time for adults in both watersheds varied from 21 to 47 days, based on mark-recapture data (n=7) and radio telemetry data (n=1). Observed variation is likely a result of several factors, including spawning site selection and the availability of suitable spawning partners, as well as natural changes in flow, temperature, and turbidity.

The adaptation to migration in Coeur d'Alene basin westslope cutthroat trout appears to be more closely related to size rather than age. This has also been reported for coastal cutthroat (Johnson, 1982). Outmigrant behavior is observed predominantly in age II fish, with more than 70 percent of juvenile outmigrants consisting of age II cutthroat trout (Figures 3.11 and 3.12). These fish range in size from 9 to 54 grams and are 120 to 162 mm long. More than 70 percent of these fish are greater than 18 grams and 125mm long. Migration by smaller fish has been observed, however, mortality both from predation and physical damage probably increases with decreasing size and weight. The smallest migrating cutthroats weigh from 8 to 18 grams and are 90 to 119 mm long. It is postulated that frequent rain on snow events during early spring may be partially responsible for displacing higher proportions of age I fish, as was observed in Lake Creek in 1996.

Smolt movement to Lake Coeur d'Alene begins in late April to early May and is completed by mid-June. Peak outmigration is often correlated with small spikes in the hydrograph (Figures 3.11 and 3.12). Daily fluctuations in water temperature may also affect downstream migration. For example, downstream movement into traps has been shown to increase during the night when daytime water temperatures rise above 16°C (George Aripa, personal communication). Upstream migration into small tributaries by juvenile cutthroat was documented to occur as late as mid May in the Benewah Creek watershed. These migrants may be resident forms that were displaced from preferred habitat during spring runoff. Alternatively, the onset of increasing temperatures in the mainstem may elicit a migratory response in resident fish.

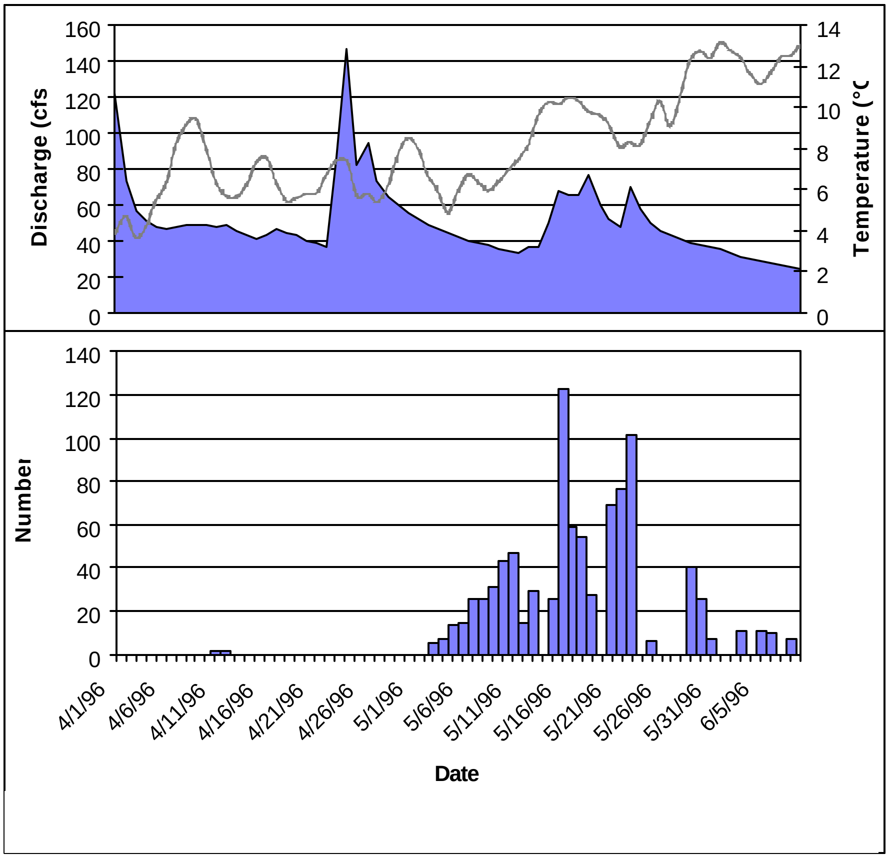


Figure 3.11 Analysis of cutthroat trout migration showing migration timing versus discharge and water temperature and age frequency of migrants in Lake Creek, 1996.

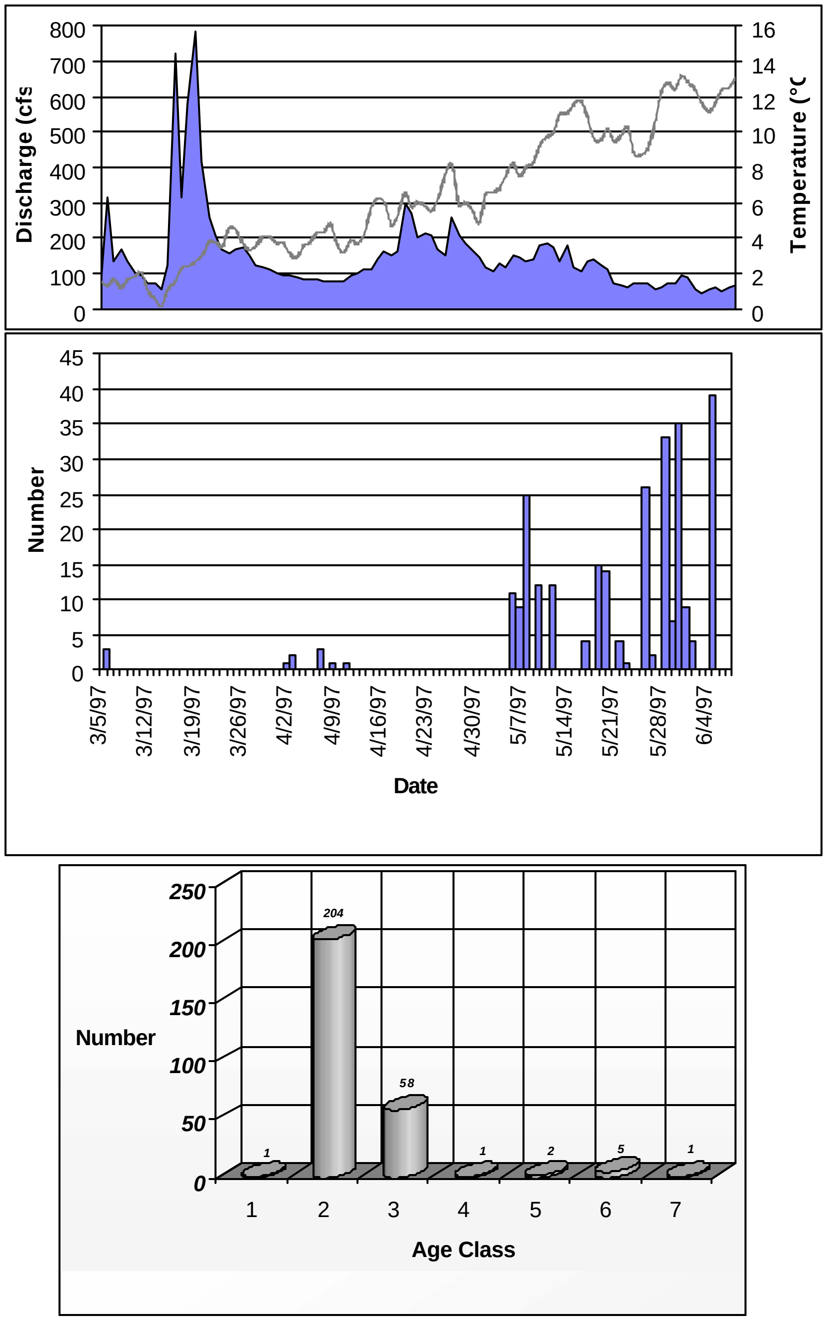


Figure 3.12 Analysis of cutthroat trout migration showing migration timing versus discharge and water temperature and age frequency of migrants in Lake Creek, 1997.

4.0 Discussion

4.1 Limiting Factors

Lake Studies

Water quality monitoring was completed on Coeur d'Alene Lake in order to assess its effect on cutthroat trout production. Earlier work has shown (Funk *et. al.*, 1973 and 1975; Horowitz *et. al.*, 1994 and Woods and Beckwith, 1995) that impacts from many different sources have caused a general decline in the water quality in Coeur d'Alene Lake. This, in turn, has had a detrimental effect on the cutthroat trout population in the lake. There is some evidence that the water quality may be improving (Woods, 1994) however, the possible legacy effects have yet to be determined.

Water Quality monitoring was completed at thirteen sites on Coeur d'Alene Lake. Multiple physical/chemical parameters were looked at in 1997. Of the parameters looked at it appears that only temperature is directly influencing the distribution of cutthroat trout in the lake. Dissolved oxygen, pH, conductivity, turbidity, total suspended solids, and dissolved heavy metals appeared to be within acceptable levels for cutthroat trout survival. Dissolved oxygen and suspended sediments though not directly impairing cutthroat suitability does affect overall water quality and impairs some use by cutthroat trout.

Low quantities of dissolved oxygen did occur at some of the sample sites, however, it is not considered limiting for cutthroat trout suitability. Low dissolved oxygen, however, is thought to have indirect affects on cutthroat trout suitability in the southern lakes area. Low dissolved oxygen values most likely are occurring from decomposition of organic matter from allochthonous sources as well as from aquatic macrophytes. Reiman (1980) and Woods (1989) noted hypolimnetic oxygen deficits in Coeur d'Alene Lake in 1979 and 1987 as well.

Increased loading of sediments from agricultural runoff does affect cutthroat suitability, though not directly, in areas near the mouths of streams in and around the lake. Sediment is accumulating at the mouth of Plummer creek in Chatcolet Lake at a rate of 2.4 cm/year (Breithaupt, 1990). This, in turn, increases the surface area where large masses of aquatic macrophytes can grow. These masses of aquatic plants can impair juvenile and adult migrations and serve as the primary foraging areas for larger piscivorous fishes.

The deposition of trace elements in the sediments of Coeur d'Alene Lake is well documented (Funk, 1973; Reiman 1980, Woods, 1989). Measured levels of dissolved metals did not appear to be directly affecting cutthroat suitability in Coeur d'Alene Lake. However, when coupled with increases in hypolimnetic oxygen deficits the potential for release of large quantities of the trace heavy metals becomes a real possibility. Currently, the principle means of controlling the levels of dissolved heavy metals in the waters of Coeur d'Alene Lake is keeping them bound up in the sediments of the lakebed. This means that managing the nutrient and sediment income in order to curtail the development of anaerobic conditions that would facilitate the release of these metals from the sediments is of paramount importance.

Nutrient and chlorophyll$_a$ levels did not appear to be significantly high when compared to values reported by Woods and Beckwith (1995) in 1991 and 1992. Analysis of the species composition of the algae by Woods and Beckwith in 1991 and 1992 showed very few, if any, species which would indicate a problem with eutrophication or a trend towards a change in trophic status in the main parts of Coeur d'Alene Lake. However, the presence of some blue-green algae in the southern lakes sample stations indicates that there is a change in trophic status towards eutrophic as you move along a southerly axis in the lake. This would most likely have a detrimental effect on the distribution of cutthroat trout in those areas. Also, large masses of aquatic macrophytes are present in the southern chain lakes area which, in all probability, are utilizing large quantities of the available nutrients and keeping chlorophyll values lower than they would normally be with the same amount of nutrients. Breithaupt (1990) completed work in Chatcolet Lake that showed the highest peaks of total phosphorous occurred shortly after peak runoff, however, these events were not accompanied by corresponding changes in algae biomass.

Trophic state indices calculated in 1975 (U.S. EPA, 1977) classified Coeur d'Alene Lake as mesotrophic lakewide. Data collected in 1989 (Breithaupt, 1990) classified the southern lakes area as eutrophic during the peak runoff period and mesotrophic for the other times of the year. Woods (1994) classified Coeur d'Alene Lake as oligotrophic for all parameters except secchi disk transparency, which classified the lake as mesotrophic. Our data classified the lake as oligotrophic in the north and meso-eutrophic in the south with water quality parameters associated with eutrophic conditions increasing in a southerly direction.

Changes in the trophic state of the lake can also have dramatic effects on the succession of fish species within a lake. Hayward and Margraf (1987) showed rapid successional changes in the species structure of fish as a result of trophic status changes in Lake Erie. Leach *et al.* (1977) showed successional changes in response to trophic status changes, but at a much slower rate. As a lake becomes more oligotrophic following clean up or restoration it can be expected that some change in the fish species abundance will occur. Some species will be able to take advantage of changing conditions, while others will not. It is not surprising that salmonid populations have declined as a result of the eutrophication of Coeur d'Alene Lake from 1950-1970’s. However, evidence suggests that in some portions of the lake this process may be reversing itself and slowly going towards oligotrophy again. This may mean that conditions which favored salmonid populations historically may return, however, the successional changes may not mirror the response to eutrophication. For example, other authors have shown that once cutthroat trout are replaced by another salmonid species (i.e. kokanee salmon), it is unlikely that space will be regained by cutthroat trout under natural conditions (Moyle and Vondracek, 1985).

Based on the water quality HSI’s calculated for cutthroat trout, the upper 10 meters of the water column generally is not suitable habitat. At only one location was the HSI value higher than 0.0. This does not mean that cutthroat trout will not be found there, but they will have trouble sustaining themselves over a long period of time. Furthermore, the euphotic zone rarely drops below 10 meters so any foraging runs into that zone will take them into unsuitable habitat, which results in added stress. Thus, all areas represented by sample stations less than ten meters in depth would be considered unsuitable cutthroat trout habitat with deeper stations showing limited distribution during certain times of the year.

It does appear that improvements in the water quality of Coeur d'Alene Lake are occurring, however, water quality is still having a detrimental effect on habitat suitability for cutthroat trout. In addition to the direct affects of temperature, indirect effects related to low dissolved oxygen concentrations, total suspended solids, and large masses of aquatic macrophytes effectively limit the cutthroat trout population in the areas where these conditions exist. Specifically, these areas include the sample locations most affected by construction of Post Falls Dam; the two shallow stations, the three southern chain lake stations, and the three interior bay stations.

Fisheries

There is no doubt that inter-specific species competition occurs between cutthroat trout and other fish species, especially the introduced ones (Griffith 1974,1988; Marnell 1986, 1987, 1988; and others). Two mechanisms are controlling the population of cutthroat trout competitive exclusion and species replacement due to rapid changes in the environmental conditions within the lake. The extent that each individual mechanism controls the population has yet to be worked out. However, the fact that the adfluvial population has not been extirpated from the lake shows that these fish have some resiliency to the detrimental effects from interactions with the introduced species. Petroskey and Bjornn (1985) demonstrated that cutthroat in the St. Joe River system show little detrimental effects from the introduction of hatchery reared rainbow trout. Griffith (1988) postulated that this resiliency may be attributed to the fact the cutthroat trout are not existing in habitat that is optimal for them but existing in habitat that is sub-optimal for the other species.

It is thought that juvenile cutthroat trout spend some time in the littoral zone just after they enter the lake from the tributaries where they would be subject to predation by these larger piscivorous fishes. It can be expected that some mortality will occur during this life stage. Insufficient data has been collected to determine exactly what effect this life stage mortality has on the overall population dynamics of the cutthroat trout in Coeur d'Alene Lake.

Of the introduced species the following have been shown to have the ability to actively feed on other fish species including adult and juvenile cutthroat trout: northern pike, largemouth bass, smallmouth bass, chinook salmon, and channel catfish. Historically, bull trout and northern squawfish were the only predators of cutthroat trout in the lake. Electrofishing data shows that these predators are associated primarily with the shoreline littoral zone. The relative abundance data shows that five species of piscivorous fishes (four introduced) have relative abundances higher than cutthroat trout. This would indicate that cutthroat trout are probably being competitively excluded from this littoral zone habitat by these other fishes.

Historically, cutthroat trout in Coeur d'Alene Lake probably utilized the littoral zone of the lake until they were large enough to move offshore and feed, most likely, on mid water prey and fish when available. Nilsson and Northcote (1981) noted that cutthroat trout in allopatry with other salmonids were found throughout the lake and in sympatry, they were located primarily in the littoral zone. It has been shown that introduction of kokanee salmon will also have detrimental effects on the cutthroat trout population (Gerstung, 1988; Marnell, 1988). Marnell (1988) determined that declines in westslope cutthroat trout populations in lakes in Glacier National Park where kokanee were introduced were caused by competition for planktivorous food. Thus, the introduction of non-native species into Coeur d'Alene Lake, at the minimum, altered the normal behavioral pattern of the cutthroat trout in both the littoral and limnetic zones of Coeur d'Alene Lake.

Based on the relative abundance information from 1994-1997 it appears that cutthroat trout are more successful in the limnetic zone than the littoral zone. In the limnetic zones with depths greater than 10 meters cutthroat trout were the third most abundant fish species caught. In the littoral zones of these same areas cutthroat trout were one of the least abundant species caught. Introduced species made up over 68% of the catch in relative abundance studies from 1994-1997 while cutthroat trout comprised less than 1% of the catch. In the littoral zones problems associated with temperature and inter-specific interactions are maximized. In the limnetic zone there is some relief from the effects of temperature however, problems associated with introduced species still exist. In relative abundance studies completed in the limnetic zones greater than ten meters deep from 1994-1997 introduced species (kokanee salmon) made up only 32% of the catch. There appears to be some association with the locations where cutthroat trout are caught in both the littoral and limnetic zones. It appears that in areas where fish are found in the limnetic zones they are also found in the littoral zones located nearby. This could mean that these fish are avoiding high temperatures in the upper waters by making foraging runs into the littoral zones during times when the water temperatures cool slightly at night. This could also be a predator avoidance mechanism as well.

Stream Studies

Peak flows in Lake Creek and Benewah Creek have been identified in previous reports as a potential limiting factor for trout production (Lillengreen 1996). Generally, increased flows during egg incubation will be favorable until they reach the point when scouring and other flood damage may take place (Allen 1969). Spikes in stream discharge during the early spring, as is characteristic of the Lake Creek and Benewah Creek watersheds, may cause redd scouring and egg damage, although no attempt has been made to quantify this source of mortality. For example, stream flows in upper Lake Creek during spring of 1997 exceeded the sheer stress of spawning gravels (5 cm geometric mean particle diameter) for 4 consecutive days during the incubation period. It is conceivable that flow events of this magnitude could scour trout redds and result in complete year class failures. Although flood damage is a natural source of mortality, canopy reduction in each of the target watersheds has probably contributed to higher storm runoff peaks. Scouring of trout redds is certainly a more frequent occurrence than in the recent past.

Habitat availability in the target watersheds is not likely to be limiting for fry life stages. It has been demonstrated that young-of-the year cutthroat trout are conspicuous inhabitants of slow-water areas near the margins of streams. Low velocity and low flow characterize these habitats. Moore and Gregory (1988) studied Cascade mountain streams and found that only about 35% of the total number of fry were observed at velocities greater than 1 cm/second, and no fry were observed at velocities greater than 15 cm/second. Focal depth for these fish increased rapidly from mid-August to early September, but the average depth was always less than 35 cm. Griffith (1972) reported similar focal points for cutthroat trout in north Idaho streams. These preferences of fry for depth and velocity are easily met during base flow conditions in the target tributaries.

This report demonstrates that abundance of juvenile cutthroat is greatest in first and second order tributaries, suggesting a close link to the most heavily utilized spawning areas. Downstream displacement, however, has been recognized as a common occurrence when stream flows approach zero in the principle spawning tributaries. While not being unique, this mechanism has not been commonly reported for most salmonid populations in the Pacific Northwest. For most salmonid species, it has been demonstrated that instream movement is minimal; individuals may remain in limited areas for several weeks or months and may return to the same locations in successive years (Edmundson et al. 1968; Bachman 1984). Limiting migration in this way is thought to confer an adaptive advantage by maximizing the net energy intake of individuals (Puckett and Dill 1985).

Typical base flow conditions in the target watersheds force juvenile trout into small pools where competition for limited space and food may occur. Other authors have suggested that at high densities, competition for space among juveniles may lead to dispersal, downstream displacement or mortality in salmonids (Chapman 1962; Mason and Chapman 1965; Everest 1971; Erman and Leidy 1975; LeCren 1973). In water quality limited systems, such as Lake Creek, Benewah Creek, and Alder Creek, dispersal to downstream areas exposes juvenile cutthroat to suboptimal temperature conditions that increase stress, weaken individuals and may result in mortality.

Cutthroat trout did not evolve with brook trout in the Benewah Creek and Alder Creek watersheds. Therefore, mechanisms that promote coexistence and resource partitioning have likely not developed. Griffith (1972) demonstrated that cutthroat trout fry emerge from the gravel later in the year than brook trout and, thus, age-0 cutthroat trout acquire a statistically significant length disadvantage that may continue throughout their lifetime. Such a size discrepancy may enhance resource partitioning, but in times of habitat shortage cutthroat trout may be at a disadvantage if they cannot hold territories against larger competitors. Competitive exclusion is a likely cause of decline for cutthroat trout in Alder Creek. Replacement of this kind, at least in stream environments, may be an irreversible process (Moyle and Vondracek 1985). This was found to be the case in Yellowstone National Park, where the introduction of brook trout has nearly always resulted in the disappearance of the cutthroat trout (Varley and Gresswell 1988). Implications for Benewah Creek are that cutthroat trout may have a difficult time recovering given continued water quality degradation and the persistence of brook trout.

Anecdotal evidence cited by residents (Ness personal communication; Hodgson personal communication) suggests that historic base flows in Lake Creek and Benewah Creek were often much lower than those considered optimal for trout production (Hickman and Raleigh, 1982; Binns and Eiserman 1979). This is most likely true for Alder Creek as well. This is not surprising considering the relatively small sizes of the target watersheds, the elevations, and the regional climate (Table 1.1). It is conceivable that base flow conditions provided the selective pressure that encouraged genetic differentiation of adfluvial stocks in the Coeur d'Alene basin.

In addition, much of the conversion of forested land to agricultural or pasture land, and removal of riparian canopy occurred prior to 1950. This suggests that stream temperatures have played a part in limiting cutthroat trout abundance and distribution within the target watersheds for at least 50 years. The range of suitable summer rearing habitat for cutthroat trout in each target watershed is significantly reduced when compared with the historic range of these fish. HSI calculations published in this report, however, indicate that improving habitat condition through restoration and protection has the potential to partially compensate for short-term degradation in water quality. In considering this information, it appears that the native strains of westslope cutthroat trout are adapted to local conditions and display a high degree of resiliency.

4.2 Supplementation Feasibility

Need For Supplementation

Due to the persistence of adverse conditions in natal streams and Coeur d'Alene Lake, cutthroat trout populations are thought to be at least moderately damaged (i.e. average spawning escapements fall between the minimum viable population and the number of adults needed to produce 50% of the carrying capacity of the stream environment). The following factors effectively limit the population of cutthroat trout in natal streams and in Coeur d'Alene Lake:

- Stochastic events that result in increased mortality of embryo, fry, and juvenile lifestages (e.g. peak flow events) have been exacerbated by land use practices during the last 60 years;
- Competition for limited space and food during base flow conditions cause displacement of juveniles into water quality limited stream reaches;
- Competitive interactions with introduced salmonids may result in replacement of native trout in Alder Creek and Benewah Creek;
- Water temperatures in the upper ten meters of the water column in Coeur d'Alene Lake exceed the optimum as described in the HSI for cutthroat trout;
- Sediment loading from tributaries in combination with large quantities of aquatic macrophyte growth and low dissolved oxygen concentrations in the hypolimnion promote conditions more favorable for introduced fish species in the lake; and

- Competitive interactions with introduced species for food, living space, and through predation limit cutthroat trout in both the littoral and limnetic zones of Coeur d'Alene Lake.

These conclusions are supported by work that was conducted previously by other investigators, as well as, work conducted by the Coeur d'Alene Tribe Fish/Water/Wildlife Program. Based on the analysis of these limiting factors, gains from habitat restoration and protection alone will not achieve the goals set forth by the Coeur d'Alene Tribal Council to provide for self-sustaining populations and harvestable numbers of cutthroat trout.

Definition

For the purposes of this document, supplementation is defined as the stocking of fish into the natural habitat to increase the abundance of naturally reproducing fish populations. Maintaining the long-term genetic fitness of the target population, while keeping the ecological and genetic impacts on non-target populations within acceptable limits, is inherent in this working definition.

On the Coeur d'Alene Indian Reservation, supplementation activities would involve stocking fish into habitats that contain depressed but existing natural fish populations. Unlike many traditional hatchery programs, the objective of supplementation here is to increase the abundance of a naturally reproducing fish populations and therefore, is oriented toward maintaining the natural biological characteristics of the population and reliance on the rearing capabilities of the natural habitat. Supplementation measures will not obviate the need to concurrently pursue other necessary actions such as habitat protection and improvement, and harvest management to rebuild stocks.

Proposed Use of Supplementation

The objective of supplementation will be to boost the population density above a certain minimum viable population size as quickly as possible. Minimum viable spawning escapement size for each stock will be calculated from the minimum effective breeding number by a transfer function, whose elements include the amount of spawning and rearing habitat available and the average total mortality. These values are currently under investigation and will be needed to develop an initial management strategy. The concept is to employ a supplementation program to a level that minimizes the risk of extirpation.

The primary role of supplementation in this case is to increase the survival rate of the population during its early life history (egg through smolt) relative to its survival rate under natural conditions. It is anticipated that this effort will result in increased adult returns to seed sparsely populated habitats and provide for limited harvest opportunities.

For depressed stocks that exist in tributaries of Coeur d'Alene Lake, the question of how many or what proportion of the natural stock to intercept for broodstock can only be resolved by careful evaluation of the impact of initially taking a small fraction of the depressed population for broodstock. An important consideration will be to ensure that capture of broodstock does not reduce the number of naturally spawning adults required to maintain the minimum viable population.

Approach To Supplementation

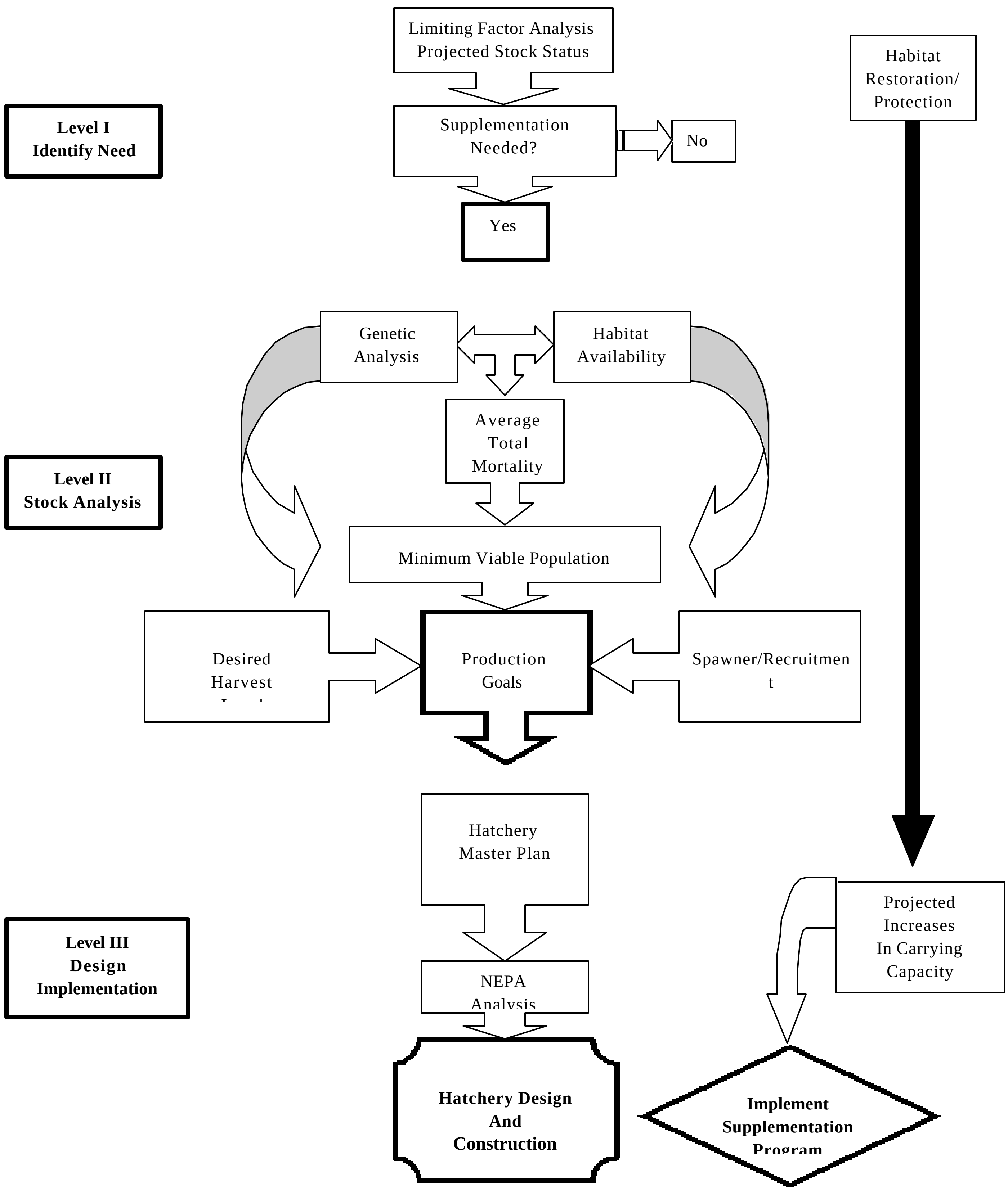
Supplementation has been a common strategy for increasing natural fish production in the Columbia River Basin. However, there is not yet a detailed understanding of which techniques work best under which circumstances (Cuenco, et. al. 1993). A phased implementation and adaptive management approach will be used to identify uncertainties and design experiments to facilitate the development of construction alternatives. A flow chart identifying critical implementation steps and unmet needs has been developed

(Figure 4.1). Three distinct levels comprise this phased approach. Level I identifies the need for supplementation through limiting factor analysis and projections of stock status. This report completes the level I tasks and describes the purpose and need for supplementation.

Level II is a comprehensive stock analysis with the ultimate purpose of developing production goals that will maintain the minimum viable population, while providing for some harvest opportunities. Information gained through genetic analysis, habitat quantification, and estimates of average total mortality throughout the lifecycle will determine minimum viable populations for the target watersheds. Several critical questions must be answered to determine overall production goals. First, does sufficient natural habitat exist, capable of supporting a viable, self-perpetuating population in the face of natural stochastic events (e.g., floods, droughts, etc.) demographic factors (e.g., ability to find a mate, sex ratio, age structure), and genetic considerations (prevent loss of genetic variation). This is important to ensure that the carrying capacity of the habitat does not become a limiting factor in population recovery. Secondly, are suitable stocks available for supplementation. To maximize the chances of success, indigenous stocks should be used for broodstock in their own enhancement program. This will ensure that important biological traits, such as spawning, incubation, and emergence timing are synchronized with favorable environmental conditions. Finally, are sufficient numbers of spawning adults available for maintenance of the minimum viable population and subsequent supplementation needs, which will provide for desired levels of harvest.

Level III outlines interim steps from master plan development to hatchery construction and implementation of the supplementation program. Information from the stock analysis will be used to develop a master plan that will identify supplementation strategies, project future harvest returns, provide a cost-benefit analysis, locate an appropriate construction site, and address the requirements of the National Environmental Policy Act (NEPA) for hatchery construction. Ongoing habitat restoration and protection will provide for increases in carrying capacity that will facilitate this phased implementation approach.

The concept of supplementation is still relatively new and uncertainties still exist about its effectiveness and safety. Monitoring and evaluation will be used to assess the performance and degree of success for each supplemented stock. The results will be used to guide other proposed supplementation projects. The following elements will be included in the monitoring and evaluation program: clearly defined, quantifiable objectives; performance measures for each objective; an experimental design which will facilitate the decision making process by allowing for adaptive management.


Limiting Factor Analysis
Projected Stock Status
Level I
Identify Need
Supplementation
Needed?
No
Yes
Habitat
Restoration/
Protection
Genetic
Analysis
Habitat
Availability
Average
Total
Mortality
Level II
Stock Analysis
Minimum Viable Population
Desired
Harvest
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Goals
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Master Plan
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Level III
Design
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Figure 4.1 Supplementation flow chart.

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Appendix A

Vertical hydrolab profiles of thirteen stations on Coeur d'Alene Lake, 1997.

Location	Phase	Sampler	Date	Time	Secchi	Sequence	Depth (m)	Dissolved Oxygen (mg/l)	Temperature (C)	pH	Conductivity (µs/cm)	TDS	Percent Saturation	Statime	Redox
Rockford Bay	1597	ASSS	4/18/97	-	1.7	11	0.4	12.58	5.64	7.34	42.4	0.03	*****	-	372
Rockford Bay	1597	ASSS	4/18/97	-	1.7	10	1.3	12.51	5.42	7.33	42.2	0.03	99	-	373
Rockford Bay	1597	ASSS	4/18/97	-	1.7	9	2.6	12.54	5.24	7.34	41.9	0.03	98.8	-	372
Rockford Bay	1597	ASSS	4/18/97	-	1.7	8	4	12.48	4.98	7.32	41.6	0.03	97.6	-	373
Rockford Bay	1597	ASSS	4/18/97	-	1.7	7	5.4	12.5	4.94	7.31	41.8	0.03	97.7	-	373
Rockford Bay	1597	ASSS	4/18/97	-	1.7	6	6.7	12.47	4.87	7.31	42.5	0.03	97.3	-	372
Rockford Bay	1597	ASSS	4/18/97	-	1.7	5	7.8	12.47	4.81	7.31	42.7	0.03	97.2	-	372
Rockford Bay	1597	ASSS	4/18/97	-	1.7	4	9	12.48	4.74	7.3	43.2	0.03	97	-	372
Rockford Bay	1597	ASSS	4/18/97	-	1.7	3	10.3	12.47	4.69	7.29	43.2	0.03	96.9	-	372
Rockford Bay	1597	ASSS	4/18/97	-	1.7	2	11.8	12.79	4.65	7.29	43.4	0.03	99.2	-	370
Rockford Bay	1597	ASSS	4/18/97	-	1.7	1	13	12.19	4.61	7.28	43.2	0.03	94.4	-	369
Rockford Bay	1997	DBSS	5/16/97	-	1.3	11	0.2	11.36	13.57	7.09	36.1	0.02	108.4	-	409
Rockford Bay	1997	DBSS	5/16/97	-	1.3	10	2	11.31	10.51	7.09	34.2	0.02	100.6	-	412
Rockford Bay	1997	DBSS	5/16/97	-	1.3	9	3.4	11.39	10.46	7.08	34.7	0.02	101.3	-	412
Rockford Bay	1997	DBSS	5/16/97	-	1.3	8	5	11.54	10.41	7.06	37.4	0.02	102.4	-	413
Rockford Bay	1997	DBSS	5/16/97	-	1.3	7	6.5	11.53	10.22	7.05	37.5	0.02	101.9	-	413
Rockford Bay	1997	DBSS	5/16/97	-	1.3	6	8	11.53	10	7.05	38	0.02	101.3	-	414
Rockford Bay	1997	DBSS	5/16/97	-	1.3	5	9.5	11.49	9.74	7.05	37.6	0.02	100.3	-	413
Rockford Bay	1997	DBSS	5/16/97	-	1.3	4	11	11.43	9.55	7.04	37.6	0.02	99.4	-	413
Rockford Bay	1997	DBSS	5/16/97	-	1.3	3	12.5	11.37	9.32	7.02	38.2	0.02	98.3	-	414
Rockford Bay	1997	DBSS	5/16/97	-	1.3	2	14	11.27	8.83	7.01	38.7	0.02	96.3	-	414
Rockford Bay	1997	DBSS	5/16/97	-	1.3	1	15.4	11.21	7.66	7.01	39.9	0.03	93.1	-	414
Rockford Bay	2197	DBSS	5/29/97	-	1.3	15	0.6	10.57	16.8	6.91	32.1	0.02	108.4	-	387
Rockford Bay	2197	DBSS	5/29/97	-	1.3	14	1.6	10.6	16.43	6.88	32	0.02	107.9	-	388
Rockford Bay	2197	DBSS	5/29/97	-	1.3	13	2.5	10.42	12.02	6.82	32.5	0.02	96.2	-	393
Rockford Bay	2197	DBSS	5/29/97	-	1.3	12	3.5	10.75	11.31	6.76	31	0.02	97.7	-	395

Rockford Bay	2197	DBSS	5/29/97	-	1.3	11	4.6	10.54	10.92	6.73	30.8	0.02	94.8	-	396
Rockford Bay	2197	DBSS	5/29/97	-	1.3	10	5.5	10.49	10.36	6.72	30.4	0.02	93.2	-	396
Rockford Bay	2197	DBSS	5/29/97	-	1.3	9	6.6	10.49	10.18	6.7	30.4	0.02	92.8	-	397
Rockford Bay	2197	DBSS	5/29/97	-	1.3	8	7.6	10.62	9.96	6.69	29	0.02	93.4	-	397
Rockford Bay	2197	DBSS	5/29/97	-	1.3	7	8.7	10.61	9.82	6.66	30.2	0.02	93.1	-	397
Rockford Bay	2197	DBSS	5/29/97	-	1.3	6	9.7	10.63	9.71	6.64	30.2	0.02	93	-	398
Rockford Bay	2197	DBSS	5/29/97	-	1.3	5	10.6	10.62	9.69	6.62	30.4	0.02	92.8	-	398
Rockford Bay	2197	DBSS	5/29/97	-	1.3	4	11.6	10.51	9.64	6.6	31.3	0.02	91.9	-	400
Rockford Bay	2197	DBSS	5/29/97	-	1.3	3	12.6	10.51	9.36	6.57	32	0.02	91.1	-	401
Rockford Bay	2197	DBSS	5/29/97	-	1.3	2	13.6	10.5	9.12	6.53	32.8	0.02	90.5	-	401
Rockford Bay	2197	DBSS	5/29/97	-	1.3	1	14.8	10.53	8.63	6.48	34	0.02	89.7	-	404
Rockford Bay	2397	DBAS	6/11/97	-	1.8	14	0.6	10.87	14.41	7.14	34.4	0.02	106.3	-	414
Rockford Bay	2397	DBAS	6/11/97	-	1.8	13	1.5	11.11	12.51	7.13	33.1	0.02	104.1	-	416
Rockford Bay	2397	DBAS	6/11/97	-	1.8	12	2.5	11.13	12.08	7.13	32.4	0.02	103.1	-	416
Rockford Bay	2397	DBAS	6/11/97	-	1.8	11	3.4	11.09	11.62	7.13	32	0.02	101.8	-	415
Rockford Bay	2397	DBAS	6/11/97	-	1.8	10	4.6	10.9	10.8	7.13	30.9	0.02	98.1	-	416
Rockford Bay	2397	DBAS	6/11/97	-	1.8	9	5.5	10.81	10.41	7.14	30	0.02	96.5	-	415
Rockford Bay	2397	DBAS	6/11/97	-	1.8	8	6.4	10.72	10.33	7.14	29.6	0.02	95.5	-	415
Rockford Bay	2397	DBAS	6/11/97	-	1.8	7	7.6	10.65	10.13	7.14	29.9	0.02	94.4	-	414
Rockford Bay	2397	DBAS	6/11/97	-	1.8	6	8.5	10.69	10.08	7.15	30.1	0.02	94.6	-	414
Rockford Bay	2397	DBAS	6/11/97	-	1.8	5	9.7	10.68	9.97	7.15	30.1	0.02	94.3	-	414
Rockford Bay	2397	DBAS	6/11/97	-	1.8	4	10.6	10.66	9.92	7.16	30	0.02	94.1	-	414
Rockford Bay	2397	DBAS	6/11/97	-	1.8	3	11.7	10.64	9.92	7.18	30	0.02	93.8	-	413
Rockford Bay	2397	DBAS	6/11/97	-	1.8	2	12.6	10.63	9.76	7.19	30.5	0.02	93.4	-	412
Rockford Bay	2397	DBAS	6/11/97	-	1.8	1	13.6	10.2	10.12	7.24	30.5	0.02	90.3	-	411
Rockford Bay	2597	DBSS	6/26/97	-	3.3	14	0.2	10.64	16.29	7.11	33.8	0.02	108.2	-	442
Rockford Bay	2597	DBSS	6/26/97	-	3.3	13	0.9	10.66	16.23	7.1	33.9	0.02	108.3	-	443
Rockford Bay	2597	DBSS	6/26/97	-	3.3	12	1.9	10.66	16.04	7.08	33.8	0.02	107.8	-	444
Rockford Bay	2597	DBSS	6/26/97	-	3.3	11	2.9	10.63	15.71	7.07	33.6	0.02	106.7	-	444

Rockford Bay	2597	DBSS	6/26/97	-	3.3	10	3.9	10.7	15.04	7.05	33.5	0.02	105.9	-	446
Rockford Bay	2597	DBSS	6/26/97	-	3.3	9	4.9	10.78	14.13	7.02	33.1	0.02	104.6	-	447
Rockford Bay	2597	DBSS	6/26/97	-	3.3	8	6	10.78	13.55	7	33.1	0.02	103.3	-	448
Rockford Bay	2597	DBSS	6/26/97	-	3.3	7	7	10.77	13.29	7	32.9	0.02	102.6	-	448
Rockford Bay	2597	DBSS	6/26/97	-	3.3	6	8	10.73	13.09	6.98	32.8	0.02	101.7	-	448
Rockford Bay	2597	DBSS	6/26/97	-	3.3	5	8.9	10.78	12.96	6.96	32.8	0.02	101.9	-	448
Rockford Bay	2597	DBSS	6/26/97	-	3.3	4	10	10.76	12.86	6.94	32.8	0.02	101.5	-	449
Rockford Bay	2597	DBSS	6/26/97	-	3.3	3	11	10.69	12.77	6.91	32.8	0.02	100.7	-	450
Rockford Bay	2597	DBSS	6/26/97	-	3.3	2	12	10.55	12.56	6.87	32.9	0.02	98.9	-	451
Rockford Bay	2597	DBSS	6/26/97	-	3.3	1	12.9	9.92	11.23	6.81	34	0.02	90.1	-	454
Rockford Bay	2797	DBSS	7/9/97	-	4.5	14	0.4	10.09	17.81	7.28	36.2	0.02	*****	-	381
Rockford Bay	2797	DBSS	7/9/97	-	4.5	13	1.2	10.26	16.91	7.27	36.1	0.02	*****	-	381
Rockford Bay	2797	DBSS	7/9/97	-	4.5	12	2.2	10.33	16.58	7.21	36.2	0.02	*****	-	382
Rockford Bay	2797	DBSS	7/9/97	-	4.5	11	3.2	10.35	16.38	7.17	36.1	0.02	*****	-	383
Rockford Bay	2797	DBSS	7/9/97	-	4.5	10	4.2	10.37	15.79	7.15	36.1	0.02	*****	-	383
Rockford Bay	2797	DBSS	7/9/97	-	4.5	9	5.2	10.36	15.4	7.09	35.8	0.02	*****	-	384
Rockford Bay	2797	DBSS	7/9/97	-	4.5	8	6.2	10.3	14.94	7.05	35.7	0.02	*****	-	385
Rockford Bay	2797	DBSS	7/9/97	-	4.5	7	7.2	10.01	13.61	7.02	34.8	0.02	96.9	-	385
Rockford Bay	2797	DBSS	7/9/97	-	4.5	6	8.2	9.88	13.17	7	34.9	0.02	94.7	-	385
Rockford Bay	2797	DBSS	7/9/97	-	4.5	5	9.2	9.74	12.26	6.99	34.6	0.02	91.5	-	385
Rockford Bay	2797	DBSS	7/9/97	-	4.5	4	10.2	9.68	11.16	7	35.2	0.02	88.6	-	384
Rockford Bay	2797	DBSS	7/9/97	-	4.5	3	11.1	9.79	10.66	7.03	35.5	0.02	88.5	-	382
Rockford Bay	2797	DBSS	7/9/97	-	4.5	2	12.3	9.81	10.31	7.04	35.9	0.02	88	-	380
Rockford Bay	2797	DBSS	7/9/97	-	4.5	1	13.2	10	10.02	7.09	36.4	0.02	89.1	-	377
Rockford Bay	2997	SSAS	7/23/97	-	5	14	0.2	10.78	19.13	7.56	37.2	0.02	109.3	-	398
Rockford Bay	2997	SSAS	7/23/97	-	5	13	0.9	10.82	18.87	7.56	37.1	0.02	109.2	-	398
Rockford Bay	2997	SSAS	7/23/97	-	5	12	1.9	10.96	18.2	7.56	36.8	0.02	109.1	-	398
Rockford Bay	2997	SSAS	7/23/97	-	5	11	2.8	11.01	18.05	7.57	36.8	0.02	109.3	-	396
Rockford Bay	2997	SSAS	7/23/97	-	5	10	3.9	11.02	18.03	7.53	36.7	0.02	109.3	-	396

Rockford Bay	2997	SSAS	7/23/97	-	5	9	5	11	18.01	7.48	36.7	0.02	109.1	-	395
Rockford Bay	2997	SSAS	7/23/97	-	5	8	5.9	11.01	17.9	7.44	36.8	0.02	109	-	395
Rockford Bay	2997	SSAS	7/23/97	-	5	7	6.9	10.99	17.74	7.38	36.8	0.02	108.5	-	396
Rockford Bay	2997	SSAS	7/23/97	-	5	6	7.9	10.87	17.49	7.32	36.8	0.02	106.7	-	396
Rockford Bay	2997	SSAS	7/23/97	-	5	5	8.9	11	16.68	7.24	36.6	0.02	106.1	-	395
Rockford Bay	2997	SSAS	7/23/97	-	5	4	9.9	10.77	16.38	7.16	36.5	0.02	103.2	-	396
Rockford Bay	2997	SSAS	7/23/97	-	5	3	10.9	10.68	15.74	7.08	36.3	0.02	101	-	394
Rockford Bay	2997	SSAS	7/23/97	-	5	2	11.9	10.59	15.24	7	36.2	0.02	99.1	-	389
Rockford Bay	2997	SSAS	7/23/97	-	5	1	12.9	10.21	14.03	6.91	35.8	0.02	93	-	385
Rockford Bay	3197	DBSS	8/5/97	-	7.7	14	0.5	9.03	23.66	7.42	41.2	0.03	105.1	-	365
Rockford Bay	3197	DBSS	8/5/97	-	7.7	13	1.1	9.11	23.37	7.42	41	0.03	105.5	-	365
Rockford Bay	3197	DBSS	8/5/97	-	7.7	12	2.1	9.24	23.08	7.39	40.8	0.03	106.5	-	365
Rockford Bay	3197	DBSS	8/5/97	-	7.7	11	3.1	9.29	22.99	7.36	40.6	0.03	106.5	-	365
Rockford Bay	3197	DBSS	8/5/97	-	7.7	10	4.1	9.3	22.86	7.34	40.4	0.03	106.7	-	365
Rockford Bay	3197	DBSS	8/5/97	-	7.7	9	5.1	9.34	22.66	7.29	40.3	0.03	106.8	-	365
Rockford Bay	3197	DBSS	8/5/97	-	7.7	8	6.1	9.53	21.58	7.27	39.4	0.03	106.7	-	365
Rockford Bay	3197	DBSS	8/5/97	-	7.7	7	7.1	9.52	21.44	7.14	39.5	0.03	106.3	-	369
Rockford Bay	3197	DBSS	8/5/97	-	7.7	6	8.1	9.85	19.73	7.05	37.9	0.02	106.4	-	372
Rockford Bay	3197	DBSS	8/5/97	-	7.7	5	9.1	9.99	15.56	6.85	34.6	0.02	99	-	379
Rockford Bay	3197	DBSS	8/5/97	-	7.7	4	10.1	9.29	12.25	6.69	34	0.02	85.5	-	382
Rockford Bay	3197	DBSS	8/5/97	-	7.7	3	11.1	9.15	10.74	6.63	34.4	0.02	81.3	-	383
Rockford Bay	3197	DBSS	8/5/97	-	7.7	2	12.1	9.18	10.3	6.61	34.8	0.02	80.8	-	381
Rockford Bay	3197	DBSS	8/5/97	-	7.7	1	13.1	9.08	10.02	6.57	35.4	0.02	79.4	-	385
Rockford Bay	3297	DBSS	8/14/97	-	8	14	0.3	8.54	22.49	7.43	42.7	0.03	97.9	-	378
Rockford Bay	3297	DBSS	8/14/97	-	8	13	1.7	8.55	22.45	7.37	42.7	0.03	97.9	-	379
Rockford Bay	3297	DBSS	8/14/97	-	8	12	2.7	8.65	22.25	7.35	41.9	0.03	98.8	-	380
Rockford Bay	3297	DBSS	8/14/97	-	8	11	3.7	8.68	22.06	7.33	41.1	0.03	98.7	-	379
Rockford Bay	3297	DBSS	8/14/97	-	8	10	4.7	8.67	21.88	7.28	41.2	0.03	98.2	-	381
Rockford Bay	3297	DBSS	8/14/97	-	8	9	5.7	8.62	21.69	7.19	41.3	0.03	97.3	-	384

Rockford Bay	3297	DBSS	8/14/97	-	8	8	6.7	8.64	21.35	7.13	41.3	0.03	97	-	385
Rockford Bay	3297	DBSS	8/14/97	-	8	7	7.7	8.72	20.58	7.04	39.5	0.03	96.3	-	388
Rockford Bay	3297	DBSS	8/14/97	-	8	6	8.7	9.23	17.2	6.92	36.6	0.02	95.2	-	395
Rockford Bay	3297	DBSS	8/14/97	-	8	5	9.7	9.25	16.24	6.87	35.9	0.02	93.6	-	397
Rockford Bay	3297	DBSS	8/14/97	-	8	4	10.7	9.12	14.81	6.84	35.3	0.02	89.4	-	398
Rockford Bay	3297	DBSS	8/14/97	-	8	3	11.7	9.02	13.12	6.82	34.9	0.02	85.2	-	399
Rockford Bay	3297	DBSS	8/14/97	-	8	2	12.8	8.61	12.44	6.79	35.3	0.02	80.2	-	401
Rockford Bay	3297	DBSS	8/14/97	-	8	1	13.7	8.22	10.67	6.81	36.1	0.02	73.5	-	401
Rockford Bay	3497	DBSS	8/27/97	-	8.5	14	0.3	9.16	21.23	7.43	47.7	0.03	102.6	-	372
Rockford Bay	3497	DBSS	8/27/97	-	8.5	13	1.2	9.17	21.23	7.39	47.6	0.03	102.7	-	373
Rockford Bay	3497	DBSS	8/27/97	-	8.5	12	2.2	9.19	21.16	7.37	47.8	0.03	102.9	-	374
Rockford Bay	3497	DBSS	8/27/97	-	8.5	11	3.1	9.23	21.11	7.35	47.8	0.03	103.1	-	374
Rockford Bay	3497	DBSS	8/27/97	-	8.5	10	4.1	9.24	21.06	7.31	47.9	0.03	103.4	-	375
Rockford Bay	3497	DBSS	8/27/97	-	8.5	9	5.2	9.21	21	7.26	47.7	0.03	102.8	-	377
Rockford Bay	3497	DBSS	8/27/97	-	8.5	8	6.1	9.19	20.91	7.18	47.8	0.03	102.3	-	380
Rockford Bay	3497	DBSS	8/27/97	-	8.5	7	7.2	9.17	20.76	7.09	47.7	0.03	101.8	-	383
Rockford Bay	3497	DBSS	8/27/97	-	8.5	6	8.2	9.26	18.17	6.96	42.3	0.03	97.6	-	389
Rockford Bay	3497	DBSS	8/27/97	-	8.5	5	9.2	9.23	16.83	6.9	40.5	0.03	94.8	-	392
Rockford Bay	3497	DBSS	8/27/97	-	8.5	4	10.2	9.09	15.66	6.82	39.7	0.03	90.9	-	396
Rockford Bay	3497	DBSS	8/27/97	-	8.5	3	11.3	8.94	14.06	6.79	39.1	0.03	86.3	-	398
Rockford Bay	3497	DBSS	8/27/97	-	8.5	2	12.3	8.74	11.82	6.76	39	0.03	80.4	-	400
Rockford Bay	3497	DBSS	8/27/97	-	8.5	1	13.2	8.8	11.23	6.78	39.2	0.03	79.8	-	400
Rockford Bay	3797	ASRP	9/17/97	-	8	13	0.2	9.33	16.91	7.31	48.4	0.03	97.3	-	392
Rockford Bay	3797	ASRP	9/17/97	-	8	12	1.8	9.34	16.9	7.31	48.5	0.03	97.5	-	392
Rockford Bay	3797	ASRP	9/17/97	-	8	11	2.8	9.33	16.89	7.31	48.4	0.03	97.3	-	392
Rockford Bay	3797	ASRP	9/17/97	-	8	10	3.8	9.33	16.86	7.3	48.4	0.03	97.3	-	392
Rockford Bay	3797	ASRP	9/17/97	-	8	9	4.8	9.35	16.85	7.31	48.4	0.03	97.5	-	391
Rockford Bay	3797	ASRP	9/17/97	-	8	8	5.8	9.33	16.83	7.29	48.5	0.03	97.2	-	392
Rockford Bay	3797	ASRP	9/17/97	-	8	7	6.8	9.34	16.82	7.29	48.3	0.03	97.4	-	392

Rockford Bay	3797	ASRP	9/17/97	-	8	6	7.8	9.35	16.8	7.28	48.5	0.03	97.6	-	392
Rockford Bay	3797	ASRP	9/17/97	-	8	5	8.8	9.34	16.63	7.27	47.7	0.03	96.9	-	393
Rockford Bay	3797	ASRP	9/17/97	-	8	4	9.8	9.31	16.6	7.25	47.6	0.03	96.5	-	393
Rockford Bay	3797	ASRP	9/17/97	-	8	3	10.8	9.37	16.55	7.25	47.4	0.03	97.1	-	394
Rockford Bay	3797	ASRP	9/17/97	-	8	2	11.8	9.34	16.36	7.26	46.8	0.03	96.5	-	393
Rockford Bay	3797	ASRP	9/17/97	-	8	1	12.8	9.38	16.33	7.25	46.6	0.03	96.8	-	393
Rockford Bay	3997	ASRA	9/29/97	-	8.2	10	0.2	9.72	15.81	7.19	43.5	0.03	99.1	-	446
Rockford Bay	3997	ASRA	9/29/97	-	8.2	9	1	9.68	15.72	7.18	43.6	0.03	98.5	-	446
Rockford Bay	3997	ASRA	9/29/97	-	8.2	8	2.5	9.66	15.67	7.15	43.6	0.03	98.2	-	447
Rockford Bay	3997	ASRA	9/29/97	-	8.2	7	4	9.65	15.61	7.12	43.6	0.03	98	-	447
Rockford Bay	3997	ASRA	9/29/97	-	8.2	6	5.5	9.58	15.54	7.1	43.5	0.03	97.1	-	447
Rockford Bay	3997	ASRA	9/29/97	-	8.2	5	7	9.52	15.36	7.06	43.6	0.03	96	-	448
Rockford Bay	3997	ASRA	9/29/97	-	8.2	4	8.5	9.48	15.19	7.04	43.6	0.03	95.4	-	447
Rockford Bay	3997	ASRA	9/29/97	-	8.2	3	10	9.44	15.13	6.98	43.6	0.03	94.9	-	446
Rockford Bay	3997	ASRA	9/29/97	-	8.2	2	11.3	9.51	14.94	6.95	43.6	0.03	95.1	-	444
Rockford Bay	3997	ASRA	9/29/97	-	8.2	1	12.8	9.42	14.71	6.89	43.5	0.03	93.8	-	441
Rockford Bay	4297	DBAS	10/21/97	-	7.5	12	0.4	10.03	12.41	7.16	48.2	0.03	92.9	-	396
Rockford Bay	4297	DBAS	10/21/97	-	7.5	11	1.8	10.02	12.41	7.13	48.2	0.03	92.9	-	398
Rockford Bay	4297	DBAS	10/21/97	-	7.5	10	2.8	10.02	12.41	7.13	48.2	0.03	92.9	-	397
Rockford Bay	4297	DBAS	10/21/97	-	7.5	9	3.8	10.02	12.41	7.12	48.2	0.03	92.9	-	398
Rockford Bay	4297	DBAS	10/21/97	-	7.5	8	4.8	10.02	12.41	7.09	48.3	0.03	92.9	-	399
Rockford Bay	4297	DBAS	10/21/97	-	7.5	7	5.9	10.02	12.41	7.09	48.2	0.03	92.9	-	399
Rockford Bay	4297	DBAS	10/21/97	-	7.5	6	6.8	10.02	12.41	7.07	48.3	0.03	92.9	-	399
Rockford Bay	4297	DBAS	10/21/97	-	7.5	5	7.8	10.04	12.41	7.04	48.3	0.03	93	-	400
Rockford Bay	4297	DBAS	10/21/97	-	7.5	4	8.8	10.04	12.41	7.02	48.3	0.03	92.9	-	400
Rockford Bay	4297	DBAS	10/21/97	-	7.5	3	9.8	10.02	12.41	7	48.2	0.03	92.9	-	401
Rockford Bay	4297	DBAS	10/21/97	-	7.5	2	11.8	10.03	12.4	6.93	48.2	0.03	92.9	-	402
Rockford Bay	4297	DBAS	10/21/97	-	7.5	1	12.8	10.05	12.38	6.88	48.3	0.03	93	-	404

Rockford Bay	4497	DBAS	11/4/97	-	7.2	13	0.3	10.68	10.28	7.1	46.8	0.03	94.4	39	420
Rockford Bay	4497	DBAS	11/4/97	-	7.2	12	1.7	10.69	10.15	7.07	46.9	0.03	94.1	41	423
Rockford Bay	4497	DBAS	11/4/97	-	7.2	11	2.7	10.66	10.14	7.08	46.9	0.03	93.9	46	422
Rockford Bay	4497	DBAS	11/4/97	-	7.2	10	3.8	10.67	10.12	7.07	47	0.03	93.9	122	423
Rockford Bay	4497	DBAS	11/4/97	-	7.2	9	4.7	10.73	10.09	7.04	46.8	0.03	94.4	50	425
Rockford Bay	4497	DBAS	11/4/97	-	7.2	8	5.8	10.66	10.09	7.05	46.9	0.03	93.8	49	424
Rockford Bay	4497	DBAS	11/4/97	-	7.2	7	6.7	10.66	10.07	7	46.9	0.03	93.7	101	427
Rockford Bay	4497	DBAS	11/4/97	-	7.2	6	7.7	10.66	10.07	7	46.9	0.03	93.7	108	427
Rockford Bay	4497	DBAS	11/4/97	-	7.2	5	8.7	10.66	10.05	7.01	47	0.03	93.7	124	427
Rockford Bay	4497	DBAS	11/4/97	-	7.2	4	9.7	10.72	10	6.99	47	0.03	94	101	428
Rockford Bay	4497	DBAS	11/4/97	-	7.2	3	10.7	10.75	10	6.95	47.2	0.03	94.3	42	431
Rockford Bay	4497	DBAS	11/4/97	-	7.2	2	11.7	10.71	9.99	6.96	47.2	0.03	93.9	53	430
Rockford Bay	4497	DBAS	11/4/97	-	7.2	1	12.6	10.66	9.99	6.88	47.2	0.03	93.5	730	434

Location	Phase	Sampler	Date	Time	Secchi	Sequence	Depth (m)	Dissolved Oxygen (mg/l)	Temperature (C)	pH	Conductivity (µs/cm)	TDS	Percent Saturation	Statime	Redox
Windy Bay Shallow	1597	ASSS	4/18/97	-	1.4	10	0.2	12.97	5.69	7.39	42.6	0.03	*****	-	388
Windy Bay Shallow	1597	ASSS	4/18/97	-	1.4	9	1.4	12.96	5.67	7.39	42.7	0.03	*****	-	388
Windy Bay Shallow	1597	ASSS	4/18/97	-	1.4	8	2.5	12.99	5.62	7.38	42.7	0.03	*****	-	389
Windy Bay Shallow	1597	ASSS	4/18/97	-	1.4	7	3.7	12.97	5.6	7.37	42.9	0.03	*****	-	389
Windy Bay Shallow	1597	ASSS	4/18/97	-	1.4	6	5.2	12.93	5.52	7.37	43.1	0.03	*****	-	389
Windy Bay Shallow	1597	ASSS	4/18/97	-	1.4	5	6.5	12.95	5.52	7.36	43.2	0.03	*****	-	390
Windy Bay Shallow	1597	ASSS	4/18/97	-	1.4	4	7.8	12.95	5.47	7.36	42.8	0.03	*****	-	390
Windy Bay Shallow	1597	ASSS	4/18/97	-	1.4	3	9.1	12.91	5.46	7.36	43.1	0.03	*****	-	390
Windy Bay Shallow	1597	ASSS	4/18/97	-	1.4	2	10.5	12.89	5.42	7.35	43.3	0.03	*****	-	391
Windy Bay Shallow	1597	ASSS	4/18/97	-	1.4	1	11.9	12.85	5.22	7.36	43.7	0.03	*****	-	392
Windy Bay Shallow	1997	DBSS	5/16/97	-	1.75	13	0.2	11.48	12.43	7.03	21	0.01	106.8	-	420
Windy Bay Shallow	1997	DBSS	5/16/97	-	1.75	12	1.1	11.6	11.46	7	36.7	0.02	105.4	-	427
Windy Bay Shallow	1997	DBSS	5/16/97	-	1.75	11	2.6	11.6	10.94	6.95	36	0.02	104.2	-	431

Windy Bay Shallow	1997	DBSS	5/16/97	-	1.75	10	4.1	11.39	10.15	6.9	34.8	0.02	100.4	-	433
Windy Bay Shallow	1997	DBSS	5/16/97	-	1.75	9	5.6	11.34	9.74	6.89	35.3	0.02	99	-	433
Windy Bay Shallow	1997	DBSS	5/16/97	-	1.75	8	7.1	11.39	9.53	6.86	36.5	0.02	99	-	434
Windy Bay Shallow	1997	DBSS	5/16/97	-	1.75	7	8.6	11.4	9.15	6.84	38.2	0.02	98.2	-	434
Windy Bay Shallow	1997	DBSS	5/16/97	-	1.75	6	10.1	11.38	8.69	6.81	38.7	0.02	97.1	-	435
Windy Bay Shallow	1997	DBSS	5/16/97	-	1.75	5	11.6	11.36	8.17	6.8	40.8	0.03	95.5	-	436
Windy Bay Shallow	1997	DBSS	5/16/97	-	1.75	4	13.1	11.34	8.04	6.77	41.4	0.03	95	-	436
Windy Bay Shallow	1997	DBSS	5/16/97	-	1.75	3	14.6	11.45	7.47	6.76	43.4	0.03	94.6	-	437
Windy Bay Shallow	1997	DBSS	5/16/97	-	1.75	2	16.1	11.4	7.19	6.73	43.4	0.03	93.5	-	437
Windy Bay Shallow	1997	DBSS	5/16/97	-	1.75	1	17.6	11.5	7.02	6.69	43.6	0.03	94	-	436
Windy Bay Shallow	2197	DBSS	5/29/97	-	1.5	16	0.5	10.7	16.3	7.03	31.5	0.02	108.5	-	382
Windy Bay Shallow	2197	DBSS	5/29/97	-	1.5	15	1.5	10.69	16.23	7.01	31.5	0.02	108.3	-	382
Windy Bay Shallow	2197	DBSS	5/29/97	-	1.5	14	2.4	10.74	15.76	6.99	31.5	0.02	107.7	-	383
Windy Bay Shallow	2197	DBSS	5/29/97	-	1.5	13	3.5	10.76	14.11	6.93	30.9	0.02	104.1	-	386
Windy Bay Shallow	2197	DBSS	5/29/97	-	1.5	12	4.5	9.97	12.69	6.86	31.2	0.02	93.5	-	389
Windy Bay Shallow	2197	DBSS	5/29/97	-	1.5	11	5.6	10.42	11.36	6.88	29.9	0.02	94.7	-	389
Windy Bay Shallow	2197	DBSS	5/29/97	-	1.5	10	6.5	10.43	10.68	6.87	29.5	0.02	93.3	-	389
Windy Bay Shallow	2197	DBSS	5/29/97	-	1.5	9	7.4	10.48	10.5	6.87	29.4	0.02	93.3	-	389
Windy Bay Shallow	2197	DBSS	5/29/97	-	1.5	8	8.5	10.52	10.33	6.87	29.6	0.02	93.3	-	389
Windy Bay Shallow	2197	DBSS	5/29/97	-	1.5	7	9.5	10.5	9.97	6.85	29.4	0.02	92.4	-	390
Windy Bay Shallow	2197	DBSS	5/29/97	-	1.5	6	10.6	10.45	9.09	6.85	30.4	0.02	90	-	390
Windy Bay Shallow	2197	DBSS	5/29/97	-	1.5	5	11.5	10.37	8.97	6.84	30.6	0.02	89.1	-	391
Windy Bay Shallow	2197	DBSS	5/29/97	-	1.5	4	12.6	10.26	8.83	6.84	31.1	0.02	87.8	-	390
Windy Bay Shallow	2197	DBSS	5/29/97	-	1.5	3	13.6	10.34	8.61	6.84	31.7	0.02	88.1	-	391
Windy Bay Shallow	2197	DBSS	5/29/97	-	1.5	2	14.6	10.31	8.42	6.84	32.7	0.02	87.4	-	391
Windy Bay Shallow	2197	DBSS	5/29/97	-	1.5	1	15.5	10.34	8.27	6.84	33.3	0.02	87.3	-	391
Windy Bay Shallow	2397	DBAS	6/11/97	-	2	16	0.5	10.8	13.95	7.02	34.9	0.02	104.5	-	423
Windy Bay Shallow	2397	DBAS	6/11/97	-	2	15	1.4	10.67	12.79	7.01	34.6	0.02	100.6	-	425
Windy Bay Shallow	2397	DBAS	6/11/97	-	2	14	2.3	10.89	11.64	6.98	32.6	0.02	100	-	426

Windy Bay Shallow	2397	DBAS	6/11/97	-	2	13	3.3	10.84	11.1	6.98	32	0.02	98.3	-	427
Windy Bay Shallow	2397	DBAS	6/11/97	-	2	12	4.4	10.74	10.53	6.98	32.5	0.02	96.1	-	427
Windy Bay Shallow	2397	DBAS	6/11/97	-	2	11	5.3	10.78	10.22	6.97	30.8	0.02	95.8	-	427
Windy Bay Shallow	2397	DBAS	6/11/97	-	2	10	6.3	10.69	10.04	6.97	30.5	0.02	94.7	-	427
Windy Bay Shallow	2397	DBAS	6/11/97	-	2	9	7.5	10.66	9.96	6.96	30.6	0.02	94.3	-	427
Windy Bay Shallow	2397	DBAS	6/11/97	-	2	8	8.3	10.58	9.89	6.96	31	0.02	93.3	-	427
Windy Bay Shallow	2397	DBAS	6/11/97	-	2	7	9.5	10.63	9.66	6.96	30.9	0.02	93.2	-	427
Windy Bay Shallow	2397	DBAS	6/11/97	-	2	6	10.4	10.6	9.63	6.96	31.4	0.02	92.8	-	427
Windy Bay Shallow	2397	DBAS	6/11/97	-	2	5	11.6	10.61	9.5	6.96	31.5	0.02	92.7	-	427
Windy Bay Shallow	2397	DBAS	6/11/97	-	2	4	12.5	10.61	9.32	6.95	32	0.02	92.2	-	427
Windy Bay Shallow	2397	DBAS	6/11/97	-	2	3	13.6	10.56	9.1	6.95	33	0.02	91.3	-	427
Windy Bay Shallow	2397	DBAS	6/11/97	-	2	2	14.7	10.65	8.68	6.95	34.5	0.02	91.1	-	428
Windy Bay Shallow	2397	DBAS	6/11/97	-	2	1	15.7	10.64	8.66	6.96	34.7	0.02	91	-	427
Windy Bay Shallow	2597	DBSS	6/26/97	-	2.2	16	0.4	10.71	14.84	7.13	35.5	0.02	105.6	-	440
Windy Bay Shallow	2597	DBSS	6/26/97	-	2.2	15	0.8	10.71	14.83	7.14	35.4	0.02	105.5	-	438
Windy Bay Shallow	2597	DBSS	6/26/97	-	2.2	14	1.7	10.72	14.74	7.11	35.4	0.02	105.5	-	440
Windy Bay Shallow	2597	DBSS	6/26/97	-	2.2	13	2.7	10.74	14.21	7.11	35.4	0.02	104.4	-	440
Windy Bay Shallow	2597	DBSS	6/26/97	-	2.2	12	3.7	10.81	13.65	7.09	34.9	0.02	103.8	-	441
Windy Bay Shallow	2597	DBSS	6/26/97	-	2.2	11	4.7	10.83	13.22	7.08	34.3	0.02	103	-	442
Windy Bay Shallow	2597	DBSS	6/26/97	-	2.2	10	5.6	10.82	12.61	7.08	34	0.02	101.4	-	442
Windy Bay Shallow	2597	DBSS	6/26/97	-	2.2	9	6.5	10.8	12.73	7.07	34	0.02	101.4	-	442
Windy Bay Shallow	2597	DBSS	6/26/97	-	2.2	8	7.9	10.81	12.12	7.05	33.5	0.02	100.2	-	442
Windy Bay Shallow	2597	DBSS	6/26/97	-	2.2	7	8.5	10.77	12.05	7.05	33.6	0.02	99.8	-	442
Windy Bay Shallow	2597	DBSS	6/26/97	-	2.2	6	9.7	10.81	11.61	7.04	33.5	0.02	99.1	-	442
Windy Bay Shallow	2597	DBSS	6/26/97	-	2.2	5	10.6	10.82	11.56	7.04	33.4	0.02	99.1	-	442
Windy Bay Shallow	2597	DBSS	6/26/97	-	2.2	4	11.5	10.79	11.41	7.03	33.7	0.02	98.4	-	442
Windy Bay Shallow	2597	DBSS	6/26/97	-	2.2	3	12.5	10.78	11.2	7.03	33.7	0.02	97.9	-	441
Windy Bay Shallow	2597	DBSS	6/26/97	-	2.2	2	13.6	10.81	11.12	7.03	33.7	0.02	98	-	441
Windy Bay Shallow	2597	DBSS	6/26/97	-	2.2	1	14.8	10.78	11.02	7.05	33.5	0.02	97.5	-	440

Windy Bay Shallow	2797	DBSS	7/9/97	-	3.5	16	0.4	10.28	16.6	7.25	37.3	0.02	*****	-	411
Windy Bay Shallow	2797	DBSS	7/9/97	-	3.5	15	1.1	10.28	16.59	7.24	37.3	0.02	*****	-	412
Windy Bay Shallow	2797	DBSS	7/9/97	-	3.5	14	2	10.29	16.55	7.2	37.3	0.02	*****	-	414
Windy Bay Shallow	2797	DBSS	7/9/97	-	3.5	13	2.9	10.28	16.53	7.18	37.3	0.02	*****	-	414
Windy Bay Shallow	2797	DBSS	7/9/97	-	3.5	12	3.9	10.28	16.32	7.15	37.4	0.02	*****	-	414
Windy Bay Shallow	2797	DBSS	7/9/97	-	3.5	11	5	10.39	15.56	7.12	36.7	0.02	*****	-	416
Windy Bay Shallow	2797	DBSS	7/9/97	-	3.5	10	6	10.4	15.31	7.1	36.5	0.02	*****	-	416
Windy Bay Shallow	2797	DBSS	7/9/97	-	3.5	9	7	10.35	15.03	7.06	36.8	0.02	*****	-	417
Windy Bay Shallow	2797	DBSS	7/9/97	-	3.5	8	8	10.35	14.51	7.06	36	0.02	*****	-	418
Windy Bay Shallow	2797	DBSS	7/9/97	-	3.5	7	9	10.3	14.21	7.03	36.3	0.02	*****	-	418
Windy Bay Shallow	2797	DBSS	7/9/97	-	3.5	6	10.1	10.19	13.65	6.99	35.2	0.02	98.7	-	419
Windy Bay Shallow	2797	DBSS	7/9/97	-	3.5	5	11	10.04	13.32	6.94	35.3	0.02	96.5	-	420
Windy Bay Shallow	2797	DBSS	7/9/97	-	3.5	4	12	9.95	12.79	6.93	34.7	0.02	94.5	-	421
Windy Bay Shallow	2797	DBSS	7/9/97	-	3.5	3	13	9.66	11.92	6.9	34.9	0.02	90	-	423
Windy Bay Shallow	2797	DBSS	7/9/97	-	3.5	2	14	9.5	10.12	6.9	36.4	0.02	84.8	-	424
Windy Bay Shallow	2797	DBSS	7/9/97	-	3.5	1	15	9.57	9.74	6.94	37.4	0.02	84.7	-	422
Windy Bay Shallow	2997	SSJD	7/23/97	-	4.5	10	1.6	10.61	19.64	7.58	39.1	0.03	108.7	-	437
Windy Bay Shallow	2997	SSJD	7/23/97	-	4.5	9	3	10.74	19.09	7.58	38.8	0.02	108.9	-	437
Windy Bay Shallow	2997	SSJD	7/23/97	-	4.5	8	4.7	11.09	18.2	7.53	37.9	0.02	110.4	-	439
Windy Bay Shallow	2997	SSJD	7/23/97	-	4.5	7	6.1	11.2	17.22	7.43	37.5	0.02	109.3	-	442
Windy Bay Shallow	2997	SSJD	7/23/97	-	4.5	6	7.6	11.19	16.86	7.34	37.3	0.02	108.3	-	444
Windy Bay Shallow	2997	SSJD	7/23/97	-	4.5	5	9	11.06	16.59	7.26	37.2	0.02	106.5	-	445
Windy Bay Shallow	2997	SSJD	7/23/97	-	4.5	4	10.5	10.86	15.92	7.17	36.6	0.02	103.1	-	447
Windy Bay Shallow	2997	SSJD	7/23/97	-	4.5	3	12	10.67	15.4	7.05	36.6	0.02	100	-	449
Windy Bay Shallow	2997	SSJD	7/23/97	-	4.5	2	13.5	9.73	14.29	6.93	36.9	0.02	89.2	-	453
Windy Bay Shallow	2997	SSJD	7/23/97	-	4.5	1	15.5	9.38	11.93	6.87	36.7	0.02	81.7	-	455
Windy Bay Shallow	3197	DBSS	8/5/97	-	6.8	12	0.4	8.97	24.09	7.47	42.1	0.03	105.3	-	369
Windy Bay Shallow	3197	DBSS	8/5/97	-	6.8	11	1	8.97	24.06	7.47	42	0.03	105.3	-	370
Windy Bay Shallow	3197	DBSS	8/5/97	-	6.8	10	2.5	9.06	23.78	7.42	42.1	0.03	105.8	-	372

Windy Bay Shallow	3197	DBSS	8/5/97	-	6.8	9	4	9.06	23.38	7.4	42	0.03	105	-	373
Windy Bay Shallow	3197	DBSS	8/5/97	-	6.8	8	5.5	9.39	22.43	7.35	41.3	0.03	106.8	-	374
Windy Bay Shallow	3197	DBSS	8/5/97	-	6.8	7	7	9.93	20.42	7.23	39.5	0.03	108.6	-	378
Windy Bay Shallow	3197	DBSS	8/5/97	-	6.8	6	8.5	10	17.76	7.11	36.1	0.02	103.5	-	383
Windy Bay Shallow	3197	DBSS	8/5/97	-	6.8	5	10	9.48	14.74	6.98	34.9	0.02	92.2	-	389
Windy Bay Shallow	3197	DBSS	8/5/97	-	6.8	4	11.5	9.06	12.82	6.95	34.6	0.02	84.5	-	392
Windy Bay Shallow	3197	DBSS	8/5/97	-	6.8	3	13	8.88	10.21	6.94	35.4	0.02	78	-	394
Windy Bay Shallow	3197	DBSS	8/5/97	-	6.8	2	14.5	8.99	9.33	6.97	36.2	0.02	77.3	-	394
Windy Bay Shallow	3197	DBSS	8/5/97	-	6.8	1	16	8.8	8.9	7.01	37.6	0.02	75.1	-	394
Windy Bay Shallow	3297	DBSS	8/14/97	-	4.5	14	0.2	8.65	22.04	7.52	41.5	0.03	98.3	-	378
Windy Bay Shallow	3297	DBSS	8/14/97	-	4.5	13	1.6	8.65	22.01	7.41	41.5	0.03	98.3	-	381
Windy Bay Shallow	3297	DBSS	8/14/97	-	4.5	12	2.6	8.64	22.02	7.4	41.6	0.03	98.2	-	381
Windy Bay Shallow	3297	DBSS	8/14/97	-	4.5	11	3.6	8.64	21.99	7.32	41.6	0.03	98.2	-	384
Windy Bay Shallow	3297	DBSS	8/14/97	-	4.5	10	4.6	8.64	21.92	7.26	41.6	0.03	98	-	386
Windy Bay Shallow	3297	DBSS	8/14/97	-	4.5	9	5.5	8.64	21.78	7.19	41.5	0.03	97.7	-	388
Windy Bay Shallow	3297	DBSS	8/14/97	-	4.5	8	6.6	8.6	21.32	7.05	41.6	0.03	96.4	-	394
Windy Bay Shallow	3297	DBSS	8/14/97	-	4.5	7	7.6	8.99	16.09	7.02	35.7	0.02	90.6	-	398
Windy Bay Shallow	3297	DBSS	8/14/97	-	4.5	6	8.5	8.96	15.22	7.01	35.6	0.02	88.8	-	399
Windy Bay Shallow	3297	DBSS	8/14/97	-	4.5	5	9.6	8.77	14.04	7.01	35.3	0.02	84.7	-	400
Windy Bay Shallow	3297	DBSS	8/14/97	-	4.5	4	10.5	8.59	12.81	7.03	35	0.02	80.6	-	400
Windy Bay Shallow	3297	DBSS	8/14/97	-	4.5	3	11.5	8.43	12.08	7.07	35.2	0.02	77.9	-	399
Windy Bay Shallow	3297	DBSS	8/14/97	-	4.5	2	12.6	8.19	11.67	7.14	35.7	0.02	74.9	-	396
Windy Bay Shallow	3297	DBSS	8/14/97	-	4.5	1	13.7	8.03	10.82	7.13	36.3	0.02	72	-	398
Windy Bay Shallow	3497	DBSS	8/27/97	-	8	12	0.4	9.26	20.74	7.51	46.5	0.03	102.8	-	368
Windy Bay Shallow	3497	DBSS	8/27/97	-	8	11	1	9.27	20.76	7.5	46.4	0.03	102.9	-	368
Windy Bay Shallow	3497	DBSS	8/27/97	-	8	10	2.5	9.26	20.74	7.48	46.5	0.03	102.8	-	369
Windy Bay Shallow	3497	DBSS	8/27/97	-	8	9	3.9	9.27	20.74	7.45	46.4	0.03	102.8	-	370
Windy Bay Shallow	3497	DBSS	8/27/97	-	8	8	5.5	9.23	20.7	7.38	46.6	0.03	102.4	-	372
Windy Bay Shallow	3497	DBSS	8/27/97	-	8	7	7.1	9.21	20.65	7.27	46.8	0.03	102	-	377

Windy Bay Shallow	3497	DBSS	8/27/97	-	8	6	8.6	9.02	17.29	6.94	39.9	0.03	93.4	-	389
Windy Bay Shallow	3497	DBSS	8/27/97	-	8	5	10	9.19	14.11	6.9	38.6	0.02	88.9	-	392
Windy Bay Shallow	3497	DBSS	8/27/97	-	8	4	11.5	8.86	12.31	6.86	38.7	0.02	82.3	-	395
Windy Bay Shallow	3497	DBSS	8/27/97	-	8	3	13.1	8.52	10.95	6.86	39.6	0.03	76.7	-	396
Windy Bay Shallow	3497	DBSS	8/27/97	-	8	2	14.4	8.44	9.36	6.9	41.3	0.03	73.2	-	396
Windy Bay Shallow	3497	DBSS	8/27/97	-	8	1	16.1	8.59	8.64	7.06	42.5	0.03	73.2	-	392
Windy Bay Shallow	3797	ASRP	9/17/97	-	8.1	16	0.2	9.32	17.01	7.27	47.5	0.03	97.5	-	384
Windy Bay Shallow	3797	ASRP	9/17/97	-	8.1	15	1.7	9.32	17.01	7.26	47.6	0.03	97.5	-	385
Windy Bay Shallow	3797	ASRP	9/17/97	-	8.1	14	2.7	9.32	17	7.24	47.6	0.03	97.5	-	385
Windy Bay Shallow	3797	ASRP	9/17/97	-	8.1	13	3.7	9.3	17.01	7.24	47.5	0.03	97.3	-	385
Windy Bay Shallow	3797	ASRP	9/17/97	-	8.1	12	4.7	9.3	16.98	7.23	47.6	0.03	97.2	-	385
Windy Bay Shallow	3797	ASRP	9/17/97	-	8.1	11	5.7	9.31	16.96	7.22	47.6	0.03	97.2	-	385
Windy Bay Shallow	3797	ASRP	9/17/97	-	8.1	10	6.7	9.29	16.91	7.19	47.3	0.03	97	-	385
Windy Bay Shallow	3797	ASRP	9/17/97	-	8.1	9	7.7	9.28	16.81	7.18	47.2	0.03	96.8	-	385
Windy Bay Shallow	3797	ASRP	9/17/97	-	8.1	8	8.7	9.29	16.75	7.15	47.1	0.03	96.8	-	385
Windy Bay Shallow	3797	ASRP	9/17/97	-	8.1	7	9.7	9.31	16.58	7.13	46.5	0.03	96.5	-	385
Windy Bay Shallow	3797	ASRP	9/17/97	-	8.1	6	10.7	9.33	16.52	7.1	46.3	0.03	96.6	-	385
Windy Bay Shallow	3797	ASRP	9/17/97	-	8.1	5	11.7	9.31	16.48	7.07	46.1	0.03	96.3	-	386
Windy Bay Shallow	3797	ASRP	9/17/97	-	8.1	4	12.7	9.3	16.38	7.05	45.9	0.03	96	-	386
Windy Bay Shallow	3797	ASRP	9/17/97	-	8.1	3	13.7	9.24	16.04	7	45.6	0.03	94.7	-	387
Windy Bay Shallow	3797	ASRP	9/17/97	-	8.1	2	14.7	9.23	15.25	6.96	43.7	0.03	93	-	388
Windy Bay Shallow	3797	ASRP	9/17/97	-	8.1	1	15.7	9.13	15.04	6.94	43.9	0.03	91.8	-	388
Windy Bay Shallow	3997	ASRA	9/29/97	-	7.5	11	0.3	9.65	14.71	7.17	46.5	0.03	96.1	-	448
Windy Bay Shallow	3997	ASRA	9/29/97	-	7.5	10	2	9.62	14.67	7.18	46.6	0.03	95.7	-	447
Windy Bay Shallow	3997	ASRA	9/29/97	-	7.5	9	3.5	9.61	14.64	7.17	46.6	0.03	95.5	-	448
Windy Bay Shallow	3997	ASRA	9/29/97	-	7.5	8	5	9.59	14.61	7.17	46.6	0.03	95.3	-	448
Windy Bay Shallow	3997	ASRA	9/29/97	-	7.5	7	6.5	9.55	14.54	7.16	46.9	0.03	94.8	-	448
Windy Bay Shallow	3997	ASRA	9/29/97	-	7.5	6	8	9.54	14.52	7.15	46.9	0.03	94.7	-	448
Windy Bay Shallow	3997	ASRA	9/29/97	-	7.5	5	9.5	9.5	14.44	7.15	46.5	0.03	94	-	448

Windy Bay Shallow	3997	ASRA	9/29/97	-	7.5	4	11	9.52	14.41	7.15	46.9	0.03	94.2	-	448
Windy Bay Shallow	3997	ASRA	9/29/97	-	7.5	3	12.5	9.47	14.27	7.15	46.6	0.03	93.7	-	447
Windy Bay Shallow	3997	ASRA	9/29/97	-	7.5	2	14	9.52	14.24	7.15	46.9	0.03	93.8	-	447
Windy Bay Shallow	3997	ASRA	9/29/97	-	7.5	1	15.2	9.48	14.16	7.15	46.8	0.03	93.2	-	447
Windy Bay Shallow	4297	DBAS	10/21/97	-	6.5	16	0.3	10.06	12.32	7.24	49.9	0.03	93	-	387
Windy Bay Shallow	4297	DBAS	10/21/97	-	6.5	15	1	10.07	12.33	7.25	49.8	0.03	93.1	-	387
Windy Bay Shallow	4297	DBAS	10/21/97	-	6.5	14	2	10.05	12.33	7.25	49.8	0.03	93	-	387
Windy Bay Shallow	4297	DBAS	10/21/97	-	6.5	13	3	10.05	12.33	7.24	49.9	0.03	93	-	388
Windy Bay Shallow	4297	DBAS	10/21/97	-	6.5	12	4	10.06	12.32	7.24	49.9	0.03	93	-	387
Windy Bay Shallow	4297	DBAS	10/21/97	-	6.5	11	5	10.05	12.33	7.23	50	0.03	93	-	387
Windy Bay Shallow	4297	DBAS	10/21/97	-	6.5	10	6	10.05	12.33	7.21	49.9	0.03	93	-	388
Windy Bay Shallow	4297	DBAS	10/21/97	-	6.5	9	7	10.05	12.33	7.2	49.9	0.03	93	-	388
Windy Bay Shallow	4297	DBAS	10/21/97	-	6.5	8	8	10.04	12.33	7.19	49.8	0.03	93	-	389
Windy Bay Shallow	4297	DBAS	10/21/97	-	6.5	7	9	10.06	12.32	7.18	49.9	0.03	93	-	389
Windy Bay Shallow	4297	DBAS	10/21/97	-	6.5	6	10	10.07	12.32	7.15	49.9	0.03	93.1	-	390
Windy Bay Shallow	4297	DBAS	10/21/97	-	6.5	5	11	10.07	12.33	7.16	49.9	0.03	93.1	-	389
Windy Bay Shallow	4297	DBAS	10/21/97	-	6.5	4	12	10.08	12.32	7.13	49.9	0.03	93.2	-	390
Windy Bay Shallow	4297	DBAS	10/21/97	-	6.5	3	13	10.09	12.33	7.12	49.9	0.03	93.3	-	391
Windy Bay Shallow	4297	DBAS	10/21/97	-	6.5	2	14	10.1	12.32	7.1	49.9	0.03	93.3	-	391
Windy Bay Shallow	4297	DBAS	10/21/97	-	6.5	1	15	10.11	12.3	7.06	50	0.03	93.5	-	392
Windy Bay Shallow	4497	DBAS	11/4/97	-	5.8	11	0.4	10.55	10.17	7.05	47.6	0.03	93	57	409
Windy Bay Shallow	4497	DBAS	11/4/97	-	5.8	10	1.7	10.53	9.89	7.14	47.7	0.03	92.2	105	406
Windy Bay Shallow	4497	DBAS	11/4/97	-	5.8	9	3.2	10.53	9.78	7.1	48.2	0.03	91.9	144	408
Windy Bay Shallow	4497	DBAS	11/4/97	-	5.8	8	4.7	10.53	9.74	7.12	48.6	0.03	91.8	117	407
Windy Bay Shallow	4497	DBAS	11/4/97	-	5.8	7	6.2	10.51	9.66	7.14	49.1	0.03	91.5	141	406
Windy Bay Shallow	4497	DBAS	11/4/97	-	5.8	6	7.7	10.52	9.55	7.1	49.7	0.03	91.4	134	408
Windy Bay Shallow	4497	DBAS	11/4/97	-	5.8	5	9.2	10.55	9.51	7.12	49.8	0.03	91.5	100	407
Windy Bay Shallow	4497	DBAS	11/4/97	-	5.8	4	10.7	10.56	9.46	7.09	50	0.03	91.5	138	408
Windy Bay Shallow	4497	DBAS	11/4/97	-	5.8	3	12.2	10.49	9.42	7.09	50.2	0.03	90.8	152	408

Windy Bay Shallow	4497	DBAS	11/4/97	-	5.8	2	13.7	10.53	9.33	7.08	50.2	0.03	90.9	115	409
Windy Bay Shallow	4497	DBAS	11/4/97	-	5.8	1	15.2	10.46	9.33	7.09	50.3	0.03	90.3	601	409

Location	Phase	Sampler	Date	Time	Secchi	Sequence	Depth (m)	Dissolved Oxygen (mg/l)	Temperature (C)	pH	Conductivity (µs/cm)	TDS	Percent Saturation	Statime	Redox
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	27	0.4	12.89	5.6	7.38	43.4	0.03	*****	-	385
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	26	1	12.89	5.6	7.36	43.5	0.03	*****	-	387
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	25	2	12.95	5.57	7.37	43.4	0.03	*****	-	387
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	24	3.2	12.96	5.54	7.37	43.5	0.03	*****	-	387
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	23	4.2	12.77	5.54	7.36	43.5	0.03	*****	-	386
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	22	5.5	12.88	5.51	7.35	43.6	0.03	*****	-	387
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	21	6.7	12.83	5.5	7.35	43.5	0.03	*****		387
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	20	7.8	12.98	5.39	7.34	43.6	0.03	*****	-	387
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	19	9	12.7	5.34	7.33	43.5	0.03	*****	-	388
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	18	10.1	12.87	5.32	7.33	43.5	0.03	*****	-	387
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	17	11.4	12.92	5.3	7.33	43.5	0.03	*****	-	388
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	16	12.8	12.72	5.24	7.33	43.5	0.03	*****	-	388
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	15	14	12.75	5.22	7.32	43.4	0.03	*****	-	388
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	14	15.3	12.86	5.17	7.32	43.3	0.03	*****	-	388
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	13	16.5	12.62	5.12	7.32	43.2	0.03	99	-	388
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	12	17.8	12.61	5.09	7.31	43.2	0.03	99	-	389
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	11	19	12.59	5.04	7.31	43.2	0.03	98.7	-	388
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	10	20.2	12.63	5.06	7.31	43.2	0.03	99	-	388
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	9	21.5	12.77	4.99	7.31	43.2	0.03	99.9	-	388
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	8	22.7	12.77	4.96	7.3	43.3	0.03	99.9	-	389
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	7	24	12.84	4.74	7.31	43.9	0.03	99.9	-	388
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	6	25.3	12.7	4.73	7.3	43.9	0.03	98.8	-	389
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	5	26.5	12.79	4.74	7.3	43.9	0.03	99.5	-	388
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	4	27.9	12.85	4.74	7.31	43.9	0.03	99.7	-	387
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	3	29.1	12.85	4.71	7.3	43.9	0.03	99.8	-	388

Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	2	30.5	12.71	4.71	7.3	44	0.03	98.8	-	388
Windy Bay Deep	1597	ASSS	4/18/97	-	1.6	1	31.8	12.93	4.74	7.31	43.9	0.03	*****	-	387
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	19	0.2	11.55	12.53	7.06	36.7	0.02	107.6	-	413
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	18	1.8	11.42	10.91	7.05	34.6	0.02	102.4	-	417
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	17	3.8	11.3	9.97	7.01	34.4	0.02	99.2	-	419
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	16	5.8	11.31	9.48	7	35	0.02	98.2	-	419
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	15	7.8	11.3	9.09	6.98	35.3	0.02	97.2	-	420
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	14	9.8	11.44	8.3	6.98	37.5	0.02	96.5	-	420
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	13	11.8	11.49	7.66	6.97	39.6	0.03	95.4		421
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	12	13.8	11.53	7.27	6.96	40.2	0.03	94.8	-	421
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	11	15.8	11.54	7.12	6.96	40.6	0.03	94.6	-	421
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	10	17.8	11.55	7.07	6.96	40.9	0.03	94.5	-	420
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	9	19.8	11.63	6.79	6.95	42.7	0.03	94.5	-	420
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	8	21.8	11.65	6.66	6.95	43.3	0.03	94.4	-	420
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	7	23.8	11.74	6.33	6.94	45.1	0.03	94.3	-	419
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	6	25.8	11.71	6.33	6.94	45.3	0.03	94.1	-	419
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	5	27.8	11.72	6.25	6.93	45.8	0.03	93.8	-	419
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	4	29.8	11.63	6.17	6.92	46	0.03	93	-	418
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	3	31.8	11.6	5.89	6.9	47	0.03	92.1	-	418
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	2	33.8	11.57	5.75	6.91	47.2	0.03	91.6	-	421
Windy Bay Deep	1997	DBSS	5/16/97	-	1.9	1	35.8	11.52	5.75	6.91	47.5	0.03	91.1	-	425
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	19	0.2	10.79	15.64	7.04	31.2	0.02	107.9	-	385
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	18	1	10.79	15.59	7.01	31.3	0.02	107.8	-	386
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	17	3	10.89	14.01	6.95	31.2	0.02	105.1	-	390
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	16	5	10.49	11.31	6.9	30.6	0.02	95.3	-	394
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	15	7	10.51	10.33	6.92	29.1	0.02	93.3	-	393
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	14	9	10.6	9.99	6.92	28.2	0.02	93.3	-	392
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	13	11.1	10.72	9.42	6.92	29.4	0.02	93.1		393
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	12	12.9	10.8	8.99	6.93	29.1	0.02	92.7	-	393

Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	11	14.9	10.88	8.48	6.92	31.1	0.02	92.3	-	393
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	10	17	11.03	7.91	6.91	34.3	0.02	92.3	-	394
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	9	19	11.14	7.33	6.89	37.4	0.02	91.9	-	395
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	8	21	11.05	7.1	6.88	38.4	0.02	90.7	-	395
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	7	23	11.13	6.61	6.87	40.4	0.03	90.2	-	396
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	6	24.9	11.12	6.33	6.86	41.5	0.03	89.5	-	396
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	5	27.1	11.03	6.08	6.85	42.5	0.03	88.2	-	397
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	4	28.9	11.03	5.97	6.85	42.8	0.03	87.9	-	397
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	3	30.9	10.89	5.87	6.84	43.3	0.03	86.6	-	398
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	2	33.1	10.89	5.84	6.85	43.4	0.03	86.4	-	398
Windy Bay Deep	2197	DBSS	5/29/97	-	1.5	1	35	10.81	5.9	6.85	43.4	0.03	86.1	-	398
Windy Bay Deep	2397	DBAS	6/11/97	-	2	17	0.8	10.58	14.84	6.97	37	0.02	104.4	-	422
Windy Bay Deep	2397	DBAS	6/11/97	-	2	16	2.8	10.68	13.55	6.94	35.7	0.02	102.6	-	424
Windy Bay Deep	2397	DBAS	6/11/97	-	2	15	4.8	10.67	10.86	6.95	31.8	0.02	96.2	-	425
Windy Bay Deep	2397	DBAS	6/11/97	-	2	14	6.9	10.7	10.12	6.95	30.1	0.02	94.8	-	424
Windy Bay Deep	2397	DBAS	6/11/97	-	2	13	8.8	10.61	9.91	6.94	30.1	0.02	93.5	-	425
Windy Bay Deep	2397	DBAS	6/11/97	-	2	12	10.8	10.67	9.2	6.94	31.8	0.02	92.5	-	425
Windy Bay Deep	2397	DBAS	6/11/97	-	2	11	12.8	10.66	9.02	6.93	33.2	0.02	92	-	425
Windy Bay Deep	2397	DBAS	6/11/97	-	2	10	14.8	10.67	8.84	6.93	33.9	0.02	91.7	-	425
Windy Bay Deep	2397	DBAS	6/11/97	-	2	9	16.7	10.67	8.58	6.92	35.2	0.02	91.2	-	425
Windy Bay Deep	2397	DBAS	6/11/97	-	2	8	18.9	10.75	7.86	6.91	38.3	0.02	90.3	-	426
Windy Bay Deep	2397	DBAS	6/11/97	-	2	7	20.7	10.81	6.91	6.89	42.8	0.03	88.6	-	427
Windy Bay Deep	2397	DBAS	6/11/97	-	2	6	22.6	10.81	6.76	6.89	43.7	0.03	88.2	-	427
Windy Bay Deep	2397	DBAS	6/11/97	-	2	5	24.8	10.82	6.61	6.89	44.3	0.03	88	-	426
Windy Bay Deep	2397	DBAS	6/11/97	-	2	4	26.8	10.85	6.51	6.88	44.7	0.03	88	-	426
Windy Bay Deep	2397	DBAS	6/11/97	-	2	3	28.7	10.92	6.33	6.88	45.4	0.03	88.2	-	426
Windy Bay Deep	2397	DBAS	6/11/97	-	2	2	30.5	10.76	6.18	6.88	46.2	0.03	86.4	-	425
Windy Bay Deep	2397	DBAS	6/11/97	-	2	1	32.4	10.85	5.98	6.87	47.1	0.03	86.7	-	426
Windy Bay Deep	2597	DBSS	6/26/97	-	2.8	16	0.3	10.75	13.52	7.13	35	0.02	102.9	-	435

Windy Bay Deep	2597	DBSS	6/26/97	-	2.8	15	1.2	10.74	13.52	7.12	35	0.02	102.8	-	436
Windy Bay Deep	2597	DBSS	6/26/97	-	2.8	14	3.3	10.76	13.44	7.08	34.9	0.02	102.8	-	437
Windy Bay Deep	2597	DBSS	6/26/97	-	2.8	13	5.3	10.79	12.84	7.05	34.5	0.02	101.6	-	438
Windy Bay Deep	2597	DBSS	6/26/97	-	2.8	12	7.4	10.78	12.14	7.05	33.5	0.02	100	-	438
Windy Bay Deep	2597	DBSS	6/26/97	-	2.8	11	9.4	10.7	11.99	7.02	33.2	0.02	99	-	437
Windy Bay Deep	2597	DBSS	6/26/97	-	2.8	10	11.4	10.74	11.92	7	33.1	0.02	99.2	-	437
Windy Bay Deep	2597	DBSS	6/26/97	-	2.8	9	13.4	10.77	11.27	6.98	33.1	0.02	98	-	437
Windy Bay Deep	2597	DBSS	6/26/97	-	2.8	8	15.3	10.75	10.79	6.96	33	0.02	96.7	-	438
Windy Bay Deep	2597	DBSS	6/26/97	-	2.8	7	17.4	10.64	9.37	6.92	34.9	0.02	92.5	-	439
Windy Bay Deep	2597	DBSS	6/26/97	-	2.8	6	19.4	10.66	7.47	6.9	39.3	0.03	88.5	-	441
Windy Bay Deep	2597	DBSS	6/26/97	-	2.8	5	21.2	10.65	7.27	6.9	40.2	0.03	87.9	-	440
Windy Bay Deep	2597	DBSS	6/26/97	-	2.8	4	23.3	10.67	6.73	6.9	42.3	0.03	87	-	440
Windy Bay Deep	2597	DBSS	6/26/97	-	2.8	3	25.3	10.71	6.56	6.9	43	0.03	86.8	-	439
Windy Bay Deep	2597	DBSS	6/26/97	-	2.8	2	27.3	10.62	6.23	6.91	44.4	0.03	85.5	-	438
Windy Bay Deep	2597	DBSS	6/26/97	-	2.8	1	29.2	10.67	6.25	6.93	44.4	0.03	85.9	-	437
Windy Bay Deep	2797	DBSS	7/9/97	-	4.1	16	0.3	10.09	17.22	7.16	38.2	0.02	*****	-	421
Windy Bay Deep	2797	DBSS	7/9/97	-	4.1	15	1	10.11	17.17	7.15	38.1	0.02	*****	-	421
Windy Bay Deep	2797	DBSS	7/9/97	-	4.1	14	3	10.19	16.89	7.06	37.9	0.02	*****	-	425
Windy Bay Deep	2797	DBSS	7/9/97	-	4.1	13	5	10.35	15.28	7.04	36.2	0.02	*****	-	426
Windy Bay Deep	2797	DBSS	7/9/97	-	4.1	12	7	10.26	14.31	6.98	35.7	0.02	*****	-	428
Windy Bay Deep	2797	DBSS	7/9/97	-	4.1	11	9	10.18	13.32	6.93	35.2	0.02	97.9	-	429
Windy Bay Deep	2797	DBSS	7/9/97	-	4.1	10	11	9.93	12.73	6.86	34.4	0.02	94.3	-	431
Windy Bay Deep	2797	DBSS	7/9/97	-	4.1	9	13	9.88	11.56	6.83	34.5	0.02	91.5	-	433
Windy Bay Deep	2797	DBSS	7/9/97	-	4.1	8	15	9.83	9.32	6.78	37.1	0.02	86.2	-	435
Windy Bay Deep	2797	DBSS	7/9/97	-	4.1	7	17	10.07	7.65	6.79	40.5	0.03	84.7	-	436
Windy Bay Deep	2797	DBSS	7/9/97	-	4.1	6	18.9	10.12	7.43	6.78	41	0.03	84.7	-	436
Windy Bay Deep	2797	DBSS	7/9/97	-	4.1	5	20.9	10.3	7.1	6.79	41.4	0.03	85.5	-	436
Windy Bay Deep	2797	DBSS	7/9/97	-	4.1	4	23	10.31	6.79	6.79	42.7	0.03	84.8	-	436
Windy Bay Deep	2797	DBSS	7/9/97	-	4.1	3	25	10.32	6.69	6.79	43.1	0.03	84.8	-	436
Windy Bay Deep	2797	DBSS	7/9/97	-	4.1	2	27	10.34	6.4	6.78	44.4	0.03	84.3	-	436

Windy Bay Deep	2797	DBSS	7/9/97	-	4.1	1	29.1	10.13	6.13	6.78	45.6	0.03	82.1	-	436
Windy Bay Deep	2997	SSJD	7/24/97	-	6.5	15	0.4	9.68	20.43	7.4	38.9	0.02	*****	-	417
Windy Bay Deep	2997	SSJD	7/24/97	-	6.5	14	1.5	9.88	19.74	7.38	38	0.02	*****	-	418
Windy Bay Deep	2997	SSJD	7/24/97	-	6.5	13	5.6	10.3	17.73	7.24	35.3	0.02	*****	-	423
Windy Bay Deep	2997	SSJD	7/24/97	-	6.5	12	7.6	10.39	16.87	7.14	35.4	0.02	*****	-	426
Windy Bay Deep	2997	SSJD	7/24/97	-	6.5	11	9.6	10.36	16.08	6.99	35.3	0.02	*****	-	431
Windy Bay Deep	2997	SSJD	7/24/97	-	6.5	10	11.6	9.99	14.64	6.85	34.2	0.02	97.7	-	437
Windy Bay Deep	2997	SSJD	7/24/97	-	6.5	9	13.6	9.49	13.24	6.75	33.4	0.02	90	-	441
Windy Bay Deep	2997	SSJD	7/24/97	-	6.5	8	15.6	8.99	10.54	6.69	34	0.02	80.2	-	444
Windy Bay Deep	2997	SSJD	7/24/97	-	6.5	7	17.6	9.71	8.29	6.67	37	0.02	82	-	446
Windy Bay Deep	2997	SSJD	7/24/97	-	6.5	6	19.6	9.92	7.28	6.67	39.2	0.03	81.7	-	446
Windy Bay Deep	2997	SSJD	7/24/97	-	6.5	5	21.6	9.99	6.87	6.66	40.4	0.03	81.4	-	447
Windy Bay Deep	2997	SSJD	7/24/97	-	6.5	4	23.6	10.1	6.66	6.66	41.1	0.03	81.8	-	447
Windy Bay Deep	2997	SSJD	7/24/97	-	6.5	3	25.5	10.09	6.51	6.66	41.5	0.03	81.5	-	446
Windy Bay Deep	2997	SSJD	7/24/97	-	6.5	2	27.7	10.07	6.31	6.66	42.2	0.03	81	-	446
Windy Bay Deep	2997	SSJD	7/24/97	-	6.5	1	29.6	9.6	6.33	6.65	42.7	0.03	77.2	-	447
Windy Bay Deep	3197	DBSS	8/5/97	-	8	18	0.3	8.91	24.3	7.42	42.5	0.03	105	-	371
Windy Bay Deep	3197	DBSS	8/5/97	-	8	17	2.3	9.05	23.52	7.4	43.6	0.03	105.1	-	372
Windy Bay Deep	3197	DBSS	8/5/97	-	8	16	4.2	9.24	22.92	7.31	43	0.03	106.1	-	375
Windy Bay Deep	3197	DBSS	8/5/97	-	8	15	6.3	9.79	20.85	7.2	40	0.03	108.1	-	378
Windy Bay Deep	3197	DBSS	8/5/97	-	8	14	8.3	10.19	16.78	7.03	35.7	0.02	103.5	-	385
Windy Bay Deep	3197	DBSS	8/5/97	-	8	13	10.4	9.31	13.48	6.87	34.2	0.02	88	-	392
Windy Bay Deep	3197	DBSS	8/5/97	-	8	12	12.3	8.86	11.15	6.84	34.7	0.02	79.6	-	394
Windy Bay Deep	3197	DBSS	8/5/97	-	8	11	14.2	8.98	9.66	6.85	35.4	0.02	77.8	-	395
Windy Bay Deep	3197	DBSS	8/5/97	-	8	10	16.2	9.21	8.37	6.85	37.6	0.02	77.4	-	395
Windy Bay Deep	3197	DBSS	8/5/97	-	8	9	18.3	9.66	7.5	6.87	38.7	0.02	79.5	-	395
Windy Bay Deep	3197	DBSS	8/5/97	-	8	8	20.3	9.78	7.05	6.87	40.3	0.03	79.5	-	395
Windy Bay Deep	3197	DBSS	8/5/97	-	8	7	22.3	9.96	6.79	6.89	40.8	0.03	80.4	-	394
Windy Bay Deep	3197	DBSS	8/5/97	-	8	6	24.2	10.08	6.57	6.89	41.3	0.03	81	-	394

Windy Bay Deep	3197	DBSS	8/5/97	-	8	5	26.3	10.1	6.38	6.91	42	0.03	80.7	-	394
Windy Bay Deep	3197	DBSS	8/5/97	-	8	4	28.3	10	6.23	6.92	42.7	0.03	79.7	-	394
Windy Bay Deep	3197	DBSS	8/5/97	-	8	3	30.3	9.74	6.26	6.93	43.2	0.03	77.7	-	394
Windy Bay Deep	3197	DBSS	8/5/97	-	8	2	32.3	9.57	6.21	6.94	43.2	0.03	76.2	-	393
Windy Bay Deep	3197	DBSS	8/5/97	-	8	1	34.3	9.56	6.18	6.98	44.8	0.03	76.1	-	392
Windy Bay Deep	3297	DBSS	8/13/97	-	10.5	16	0.3	8.72	22.94	7.3	41.9	0.03	100.8	-	382
Windy Bay Deep	3297	DBSS	8/13/97	-	10.5	15	1.3	8.77	22.33	7.2	42.6	0.03	100.2	-	388
Windy Bay Deep	3297	DBSS	8/13/97	-	10.5	14	3.3	8.8	22.03	7.13	43.1	0.03	100.1	-	391
Windy Bay Deep	3297	DBSS	8/13/97	-	10.5	13	5.3	8.9	21.82	7.43	42	0.03	100.7	-	384
Windy Bay Deep	3297	DBSS	8/13/97	-	10.5	12	7.3	8.87	21.61	7.31	41.5	0.03	100	-	388
Windy Bay Deep	3297	DBSS	8/13/97	-	10.5	11	9.3	8.96	20.73	7.4	41.3	0.03	99.4	-	383
Windy Bay Deep	3297	DBSS	8/13/97	-	10.5	10	11.3	8.86	13.82	6.78	35.3	0.02	85.6	-	408
Windy Bay Deep	3297	DBSS	8/13/97	-	10.5	9	13.5	8.82	11.59	7.2	35.9	0.02	80.5	-	399
Windy Bay Deep	3297	DBSS	8/13/97	-	10.5	8	15.4	8.47	10.68	6.75	35.9	0.02	75.7	-	411
Windy Bay Deep	3297	DBSS	8/13/97	-	10.5	7	17.4	8.57	9.04	6.76	37.3	0.02	73.7	-	411
Windy Bay Deep	3297	DBSS	8/13/97	-	10.5	6	19.3	8.84	8.18	6.77	39	0.03	74.4	-	411
Windy Bay Deep	3297	DBSS	8/13/97	-	10.5	5	21.4	9.11	7.27	6.78	40.8	0.03	74.9	-	411
Windy Bay Deep	3297	DBSS	8/13/97	-	10.5	4	23.4	9.37	6.92	6.8	41.5	0.03	76.6	-	410
Windy Bay Deep	3297	DBSS	8/13/97	-	10.5	3	25.4	9.5	6.72	6.81	42.1	0.03	77.1	-	409
Windy Bay Deep	3297	DBSS	8/13/97	-	10.5	2	27.4	9.52	6.56	6.82	42.5	0.03	76.9	-	408
Windy Bay Deep	3297	DBSS	8/13/97	-	10.5	1	29.4	9.12	6.33	6.83	43.8	0.03	73.3	-	408
Windy Bay Deep	3497	DBSS	8/27/97	-	8	16	0.3	9.22	20.87	7.41	47	0.03	102.6	-	372
Windy Bay Deep	3497	DBSS	8/27/97	-	8	15	1.5	9.23	20.83	7.39	47.1	0.03	102.7	-	372
Windy Bay Deep	3497	DBSS	8/27/97	-	8	14	3.5	9.23	20.78	7.33	46.9	0.03	102.5	-	374
Windy Bay Deep	3497	DBSS	8/27/97	-	8	13	5.4	9.24	20.67	7.26	46.8	0.03	102.4	-	375
Windy Bay Deep	3497	DBSS	8/27/97	-	8	12	7.5	9.15	20.69	7.08	46.7	0.03	101.5	-	382
Windy Bay Deep	3497	DBSS	8/27/97	-	8	11	9.5	9.28	15.93	6.87	38.8	0.02	93.5	-	394
Windy Bay Deep	3497	DBSS	8/27/97	-	8	10	11.5	8.91	12.38	6.82	38.3	0.02	82.9	-	397
Windy Bay Deep	3497	DBSS	8/27/97	-	8	9	13.6	8.48	9.58	6.8	40.6	0.03	73.9	-	399

Windy Bay Deep	3497	DBSS	8/27/97	-	8	8	15.5	9.07	7.68	6.8	43.2	0.03	75.5	-	401
Windy Bay Deep	3497	DBSS	8/27/97	-	8	7	17.2	9.43	7.07	6.83	44.3	0.03	77.4	-	400
Windy Bay Deep	3497	DBSS	8/27/97	-	8	6	21.6	9.72	6.64	6.88	45.3	0.03	78.8	-	399
Windy Bay Deep	3497	DBSS	8/27/97	-	8	5	23.5	9.72	6.5	6.89	45.6	0.03	78.6	-	398
Windy Bay Deep	3497	DBSS	8/27/97	-	8	4	25.6	9.71	6.38	6.9	46.1	0.03	78.2	-	398
Windy Bay Deep	3497	DBSS	8/27/97	-	8	3	27.5	9.58	6.3	6.92	46.4	0.03	77	-	398
Windy Bay Deep	3497	DBSS	8/27/97	-	8	2	29.5	9.47	6.28	6.96	46.5	0.03	76.2	-	397
Windy Bay Deep	3497	DBSS	8/27/97	-	8	1	31.7	9.48	6.28	7.05	46.7	0.03	76.2	-	395
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	17	0.4	9.28	17.53	7.3	52	0.03	98.1	-	389
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	16	2.7	9.34	17.56	7.27	52	0.03	98.6	-	390
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	15	4.7	9.22	17.51	7.22	52	0.03	97.5	-	392
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	14	6.7	9.22	17.24	7.18	50.2	0.03	96.9	-	393
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	13	8.7	9.25	17.17	7.15	49.7	0.03	97.1	-	393
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	12	10.7	9.28	17.12	7.08	48.7	0.03	97.3	-	395
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	11	12.7	9.26	16.8	6.98	47.3	0.03	96.3	-	398
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	10	14.7	9.07	15.91	6.86	45	0.03	92.6	-	403
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	9	16.7	8.66	12.17	6.73	40.1	0.03	81.4	-	411
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	8	18.7	8.43	10.51	6.7	41.1	0.03	76.3	-	412
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	7	20.7	8.47	9.46	6.71	41.9	0.03	74.8	-	412
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	6	22.7	8.57	8.43	6.71	42.7	0.03	73.8	-	413
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	5	24.7	8.89	7.38	6.72	43.9	0.03	74.6	-	413
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	4	26.7	9.04	7.07	6.74	44.5	0.03	75.3	-	412
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	3	28.7	9.16	6.73	6.76	45.2	0.03	75.6	-	411
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	2	30.7	9.21	6.64	6.8	45.2	0.03	75.9	-	410
Windy Bay Deep	3797	ASRP	9/17/97	-	7.5	1	32.7	9.23	6.64	6.84	45.2	0.03	76	-	408
Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	17	0.2	9.77	15.09	7.16	46.3	0.03	98.1	-	444
Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	16	2	9.65	15.03	7.16	46.4	0.03	96.8	-	444
Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	15	4	9.6	14.96	7.15	46.2	0.03	96.2	-	444
Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	14	6	9.59	14.78	7.11	46.6	0.03	95.7	-	445

Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	13	8	9.57	14.66	7.09	46.5	0.03	95.2	-	446
Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	12	10	9.57	14.66	7.07	46.6	0.03	95.2	-	446
Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	11	12	9.5	14.58	7.02	46.5	0.03	94.3	-	447
Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	10	14	9.39	14.35	6.97	45.9	0.03	92.8	-	448
Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	9	16	9.34	13.92	6.94	45.4	0.03	91.4	-	449
Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	8	18	9.28	13.6	6.91	45	0.03	90.2	-	450
Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	7	20	9.23	13.3	6.85	44.7	0.03	89.1	-	451
Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	6	22	8.88	11.2	6.78	42.2	0.03	81.7	-	455
Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	5	23.9	8.9	8.48	6.75	41.4	0.03	76.8	-	457
Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	4	26	8.91	7.97	6.74	41.8	0.03	75.9	-	457
Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	3	28	8.94	7.6	6.76	42	0.03	75.5	-	457
Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	2	30	8.93	7.28	6.8	42.2	0.03	74.8	-	455
Windy Bay Deep	3997	ASRA	9/29/97	-	7.5	1	31.8	9.05	7	6.83	42.6	0.03	75.3	-	454
Windy Bay Deep	4297	DBAS	10/21/97	-	7.3	16	0.3	9.92	12.28	7.14	49.7	0.03	91.7	-	386
Windy Bay Deep	4297	DBAS	10/21/97	-	7.3	15	1	9.94	12.28	7.14	49.7	0.03	91.8	-	387
Windy Bay Deep	4297	DBAS	10/21/97	-	7.3	14	3	9.92	12.3	7.14	49.7	0.03	91.6	-	386
Windy Bay Deep	4297	DBAS	10/21/97	-	7.3	13	5	9.91	12.3	7.12	49.7	0.03	91.5	-	387
Windy Bay Deep	4297	DBAS	10/21/97	-	7.3	12	7	9.91	12.28	7.1	49.9	0.03	91.6	-	387
Windy Bay Deep	4297	DBAS	10/21/97	-	7.3	11	9	9.92	12.27	7.07	49.8	0.03	91.6	-	388
Windy Bay Deep	4297	DBAS	10/21/97	-	7.3	10	11	9.91	12.27	7.03	49.7	0.03	91.5	-	388
Windy Bay Deep	4297	DBAS	10/21/97	-	7.3	9	13	9.88	12.27	6.99	49.7	0.03	91.2	-	389
Windy Bay Deep	4297	DBAS	10/21/97	-	7.3	8	15	9.82	12.27	6.91	49.8	0.03	90.7	-	392
Windy Bay Deep	4297	DBAS	10/21/97	-	7.3	7	17	9.74	12.18	6.8	49.8	0.03	89.7	-	395
Windy Bay Deep	4297	DBAS	10/21/97	-	7.3	6	19	8.21	10.1	6.64	48.8	0.03	72.1	-	401
Windy Bay Deep	4297	DBAS	10/21/97	-	7.3	5	21	8.3	7.99	6.64	47.5	0.03	69.2	-	402
Windy Bay Deep	4297	DBAS	10/21/97	-	7.3	4	23	8.4	7.35	6.64	47.5	0.03	69	-	402
Windy Bay Deep	4297	DBAS	10/21/97	-	7.3	3	25	8.27	6.96	6.65	47.6	0.03	67.3	-	402
Windy Bay Deep	4297	DBAS	10/21/97	-	7.3	2	27	8.28	6.91	6.65	47.9	0.03	67.2	-	402
Windy Bay Deep	4297	DBAS	10/21/97	-	7.3	1	29.1	8.27	6.84	6.71	47.9	0.03	67	-	401

Windy Bay Deep	4497	DBAS	11/4/97	-	7	16	0.6	10.6	10.33	7.11	46.8	0.03	93.7	57	411
Windy Bay Deep	4497	DBAS	11/4/97	-	7	15	2.8	10.56	10.23	7.1	46.9	0.03	93.1	142	413
Windy Bay Deep	4497	DBAS	11/4/97	-	7	14	4.8	10.5	10.22	7.11	46.9	0.03	92.6	207	413
Windy Bay Deep	4497	DBAS	11/4/97	-	7	13	6.8	10.43	10.07	7.09	47.1	0.03	91.6	56	414
Windy Bay Deep	4497	DBAS	11/4/97	-	7	12	8.8	10.46	10.07	7.08	47.1	0.03	91.9	46	415
Windy Bay Deep	4497	DBAS	11/4/97	-	7	11	10.8	10.45	10.09	7.09	47.2	0.03	91.9	40	415
Windy Bay Deep	4497	DBAS	11/4/97	-	7	10	12.8	10.46	10.07	7.09	47.2	0.03	91.9	117	415
Windy Bay Deep	4497	DBAS	11/4/97	-	7	9	14.8	10.47	10.05	7.09	47.2	0.03	92	159	415
Windy Bay Deep	4497	DBAS	11/4/97	-	7	8	16.8	10.42	10.04	7.08	47.4	0.03	91.5	132	415
Windy Bay Deep	4497	DBAS	11/4/97	-	7	7	18.8	10.44	10.04	7.08	47.3	0.03	91.7	102	415
Windy Bay Deep	4497	DBAS	11/4/97	-	7	6	20.8	10.45	10.02	7.07	47.3	0.03	91.7	112	416
Windy Bay Deep	4497	DBAS	11/4/97	-	7	5	22.8	10.43	9.97	7.07	47.5	0.03	91.5	52	416
Windy Bay Deep	4497	DBAS	11/4/97	-	7	4	24.8	10.39	9.91	7.04	47.7	0.03	91	55	417
Windy Bay Deep	4497	DBAS	11/4/97	-	7	3	26.8	10.34	9.71	7.03	48.3	0.03	90.1	119	418
Windy Bay Deep	4497	DBAS	11/4/97	-	7	2	28.8	10.24	9.33	7.02	49.5	0.03	88.5	111	419
Windy Bay Deep	4497	DBAS	11/4/97	-	7	1	30.8	10.05	9.02	7.01	50	0.03	86.1	631	421

Location	Phase	Sampler	Date	Time	Secchi	Sequence	Depth (m)	Dissolved Oxygen (mg/l)	Temperature (C)	pH	Conductivity (µs/cm)	TDS	Percent Saturation	Statime	Redox
CDA River	1597	ASSS	4/18/97	-	1.8	17	0.4	12.48	6.49	7.48	37.4	0.02	*****	-	372
CDA River	1597	ASSS	4/18/97	-	1.8	16	1.4	12.52	6.33	7.46	37.4	0.02	*****	-	374
CDA River	1597	ASSS	4/18/97	-	1.8	15	2.4	12.46	6.3	7.46	37.4	0.02	*****	-	374
CDA River	1597	ASSS	4/18/97	-	1.8	14	3.5	12.47	6.28	7.45	37.4	0.02	*****	-	374
CDA River	1597	ASSS	4/18/97	-	1.8	13	4.6	12.42	6.28	7.44	37.4	0.02	*****	-	374
CDA River	1597	ASSS	4/18/97	-	1.8	12	5.5	12.4	6.28	7.44	37.4	0.02	*****	-	374
CDA River	1597	ASSS	4/18/97	-	1.8	11	6.6	12.41	6.26	7.43	37.5	0.02	*****	-	374
CDA River	1597	ASSS	4/18/97	-	1.8	10	7.8	12.39	6.25	7.43	37.4	0.02	*****	-	374
CDA River	1597	ASSS	4/18/97	-	1.8	9	8.8	12.45	6.23	7.42	37.5	0.02	*****	-	374
CDA River	1597	ASSS	4/18/97	-	1.8	8	10	12.42	6.2	7.42	37.5	0.02	*****	-	374
CDA River	1597	ASSS	4/18/97	-	1.8	7	11.1	12.38	6.17	7.42	37.6	0.02	99.9	-	374

CDA River	1597	ASSS	4/18/97	-	1.8	6	12.4	12.34	6.08	7.41	38	0.02	99.3	-	374
CDA River	1597	ASSS	4/18/97	-	1.8	5	13.5	12.32	5.88	7.41	38.4	0.02	98.6	-	374
CDA River	1597	ASSS	4/18/97	-	1.8	4	14.8	12.27	5.77	7.4	38.5	0.02	98	-	375
CDA River	1597	ASSS	4/18/97	-	1.8	3	16	12.23	5.67	7.39	38.4	0.02	97.4	-	376
CDA River	1597	ASSS	4/18/97	-	1.8	2	17.2	12.19	5.59	7.39	38.3	0.02	96.9	-	380
CDA River	1597	ASSS	4/18/97	-	1.8	1	18.6	12.59	5.44	7.38	38.4	0.02	99.9	-	382
CDA River	1997	DBSS	5/16/97	-	0.6	15	0.2	10.61	14.93	6.94	32	0.02	104.3	-	390
CDA River	1997	DBSS	5/16/97	-	0.6	14	1.6	10.56	12.51	6.86	32	0.02	98.3	-	399
CDA River	1997	DBSS	5/16/97	-	0.6	13	2.7	10.43	12.37	6.84	32.1	0.02	96.8	-	401
CDA River	1997	DBSS	5/16/97	-	0.6	12	3.7	10.41	12.27	6.83	32.3	0.02	96.4	-	402
CDA River	1997	DBSS	5/16/97	-	0.6	11	4.7	10.33	12.18	6.82	32.2	0.02	95.5	-	402
CDA River	1997	DBSS	5/16/97	-	0.6	10	5.7	10.25	11.91	6.82	32.4	0.02	94.1	-	404
CDA River	1997	DBSS	5/16/97	-	0.6	9	6.7	10.25	11.76	6.82	32.3	0.02	93.8	-	404
CDA River	1997	DBSS	5/16/97	-	0.6	8	7.7	10.24	11.64	6.85	32.3	0.02	93.5	-	403
CDA River	1997	DBSS	5/16/97	-	0.6	7	8.7	10.33	11.31	6.93	32	0.02	93.7	-	400
CDA River	1997	DBSS	5/16/97	-	0.6	6	9.7	10.67	10.4	6.99	31	0.02	94.6	-	396
CDA River	1997	DBSS	5/16/97	-	0.6	5	10.7	11.02	9.42	7.01	29.6	0.02	95.5	-	394
CDA River	1997	DBSS	5/16/97	-	0.6	4	11.7	11	9.06	7.01	31.9	0.02	94.5	-	394
CDA River	1997	DBSS	5/16/97	-	0.6	3	12.7	10.99	8.88	7.01	32.5	0.02	94	-	393
CDA River	1997	DBSS	5/16/97	-	0.6	2	13.7	11.02	8.77	7.01	32.9	0.02	94	-	392
CDA River	1997	DBSS	5/16/97	-	0.6	1	14.7	10.97	8.73	7.01	33	0.02	93.5	-	395
CDA River	2197	DBSS	5/29/97	-	1.7	12	0.5	10.55	14.36	6.93	35.9	0.02	102.5	-	389
CDA River	2197	DBSS	5/29/97	-	1.7	11	1.4	10.7	13.83	6.95	35.4	0.02	102.8	-	389
CDA River	2197	DBSS	5/29/97	-	1.7	10	2.3	10.71	13.67	6.94	34.6	0.02	102.5	-	390
CDA River	2197	DBSS	5/29/97	-	1.7	9	3.5	10.8	12.2	6.92	35.6	0.02	100.1	-	392
CDA River	2197	DBSS	5/29/97	-	1.7	8	4.3	10.8	12.05	6.91	35.7	0.02	99.8	-	392
CDA River	2197	DBSS	5/29/97	-	1.7	7	5.4	10.8	12	6.91	35.8	0.02	99.6	-	392
CDA River	2197	DBSS	5/29/97	-	1.7	6	6.3	10.78	11.94	6.91	35.8	0.02	99.3	-	392
CDA River	2197	DBSS	5/29/97	-	1.7	5	7.3	10.77	11.92	6.91	35.8	0.02	99.2	-	392

CDA River	2197	DBSS	5/29/97	-	1.7	4	8.3	10.65	11.2	6.94	33.3	0.02	96.4	-	392
CDA River	2197	DBSS	5/29/97	-	1.7	3	9.3	10.87	9.58	7.01	27.5	0.02	94.7	-	389
CDA River	2197	DBSS	5/29/97	-	1.7	2	10.3	10.87	9.33	7.02	26.8	0.02	94.2	-	390
CDA River	2197	DBSS	5/29/97	-	1.7	1	11.4	10.86	9.33	7.01	27.1	0.02	94.1	-	392
CDA River	2397	DBAS	6/11/97	-	1.9	13	0.4	10.07	16.99	6.99	43.2	0.03	104	-	420
CDA River	2397	DBAS	6/11/97	-	1.9	12	1	10.06	15.56	7	44.3	0.03	100.8	-	420
CDA River	2397	DBAS	6/11/97	-	1.9	11	2	10.06	15.31	6.98	44.8	0.03	100.3	-	421
CDA River	2397	DBAS	6/11/97	-	1.9	10	2.9	10	14.53	6.97	45	0.03	98	-	422
CDA River	2397	DBAS	6/11/97	-	1.9	9	4	10.02	14.59	6.98	45.1	0.03	98.3	-	421
CDA River	2397	DBAS	6/11/97	-	1.9	8	5	10.06	14.36	6.99	44.7	0.03	98.2	-	421
CDA River	2397	DBAS	6/11/97	-	1.9	7	5.9	10.05	14.28	6.99	44	0.03	97.9	-	421
CDA River	2397	DBAS	6/11/97	-	1.9	6	6.9	10.52	12.6	7.03	36.9	0.02	98.7	-	419
CDA River	2397	DBAS	6/11/97	-	1.9	5	7.8	10.59	12.22	7.05	34.8	0.02	98.6	-	417
CDA River	2397	DBAS	6/11/97	-	1.9	4	8.9	10.94	11.51	7.08	30.8	0.02	100.1	-	415
CDA River	2397	DBAS	6/11/97	-	1.9	3	9.9	11.04	11.3	7.08	30.1	0.02	100.5	-	414
CDA River	2397	DBAS	6/11/97	-	1.9	2	10.9	11.08	11.25	7.07	29.2	0.02	100.8	-	414
CDA River	2397	DBAS	6/11/97	-	1.9	1	11.9	10.86	10.87	7.07	29.1	0.02	98.1	-	414
CDA River	2597	DBSS	6/26/97	-	2.2	13	0.3	10.46	14.23	7.08	45.3	0.03	101.7	-	435
CDA River	2597	DBSS	6/26/97	-	2.2	12	1.2	10.46	14.25	7.07	45.3	0.03	101.7	-	437
CDA River	2597	DBSS	6/26/97	-	2.2	11	2.3	10.45	14.16	7.05	45	0.03	101.5	-	438
CDA River	2597	DBSS	6/26/97	-	2.2	10	3.3	10.49	13.73	7.01	44.6	0.03	100.7	-	439
CDA River	2597	DBSS	6/26/97	-	2.2	9	4.2	10.47	13.6	7.03	42.4	0.03	100.4	-	437
CDA River	2597	DBSS	6/26/97	-	2.2	8	5.2	10.52	13.4	7.02	37.8	0.02	100.5	-	436
CDA River	2597	DBSS	6/26/97	-	2.2	7	6.2	10.56	12.5	7	34.2	0.02	98.8	-	436
CDA River	2597	DBSS	6/26/97	-	2.2	6	7.2	10.55	12.18	7	32.4	0.02	98	-	435
CDA River	2597	DBSS	6/26/97	-	2.2	5	8.3	10.45	11.41	7	30.5	0.02	95.3	-	435
CDA River	2597	DBSS	6/26/97	-	2.2	4	9	10.39	11.36	7	30.4	0.02	94.7	-	435
CDA River	2597	DBSS	6/26/97	-	2.2	3	10.2	10.39	11.33	6.99	30.4	0.02	94.7	-	434
CDA River	2597	DBSS	6/26/97	-	2.2	2	11.5	10.22	11.12	6.98	30.4	0.02	92.6	-	434

CDA River	2597	DBSS	6/26/97	-	2.2	1	12.6	10.07	10.82	7	30.6	0.02	90.6	-	433
CDA River	2797	DBSS	7/9/97	-	3.3	11	0.4	9.72	18.54	7.11	49.9	0.03	*****	-	421
CDA River	2797	DBSS	7/9/97	-	3.3	10	1.1	9.72	18.53	7.09	50	0.03	*****	-	421
CDA River	2797	DBSS	7/9/97	-	3.3	9	2.1	9.73	18.5	7.06	52.1	0.03	*****	-	422
CDA River	2797	DBSS	7/9/97	-	3.3	8	3	9.78	18.37	7	54.8	0.04	*****	-	424
CDA River	2797	DBSS	7/9/97	-	3.3	7	4.1	9.6	18.03	6.91	69.8	0.04	*****	-	428
CDA River	2797	DBSS	7/9/97	-	3.3	6	5	9.65	17.73	6.86	75.4	0.05	*****	-	430
CDA River	2797	DBSS	7/9/97	-	3.3	5	6	9.96	14.99	-	43	0.03	99.4	-	426
CDA River	2797	DBSS	7/9/97	-	3.3	4	7	10	13.1	6.94	34.1	0.02	95.7	-	425
CDA River	2797	DBSS	7/9/97	-	3.3	3	9	9.76	11.94	6.91	33.4	0.02	90.9	-	426
CDA River	2797	DBSS	7/9/97	-	3.3	2	10.1	9.75	11.82	6.92	33.4	0.02	90.6	-	426
CDA River	2797	DBSS	7/9/97	-	3.3	1	11	9.71	11.82	6.94	33.4	0.02	90.3	-	430
CDA River	2997	SSJD	7/24/97	-	4.5	12	0.5	9.38	21.69	7.49	39.8	0.03	*****	-	395
CDA River	2997	SSJD	7/24/97	-	4.5	11	1.2	9.4	21.37	7.46	42.7	0.03	*****	-	396
CDA River	2997	SSJD	7/24/97	-	4.5	10	2.3	9.4	21.33	7.4	48.4	0.03	*****	-	398
CDA River	2997	SSJD	7/24/97	-	4.5	9	3.2	9.4	21.33	7.37	50.1	0.03	*****	-	398
CDA River	2997	SSJD	7/24/97	-	4.5	8	4.2	9.4	21.3	7.33	51.3	0.03	*****	-	398
CDA River	2997	SSJD	7/24/97	-	4.5	7	5.3	9.42	21.11	7.26	49.9	0.03	*****	-	398
CDA River	2997	SSJD	7/24/97	-	4.5	6	6.2	9.33	20.67	7.11	58.2	0.04	*****	-	402
CDA River	2997	SSJD	7/24/97	-	4.5	5	7.2	10.2	16.19	7.12	35.9	0.02	*****	-	401
CDA River	2997	SSJD	7/24/97	-	4.5	4	8.2	9.82	15.19	7.02	34.9	0.02	97.2	-	403
CDA River	2997	SSJD	7/24/97	-	4.5	3	9.2	9.45	14.18	6.98	34	0.02	91.5	-	402
CDA River	2997	SSJD	7/24/97	-	4.5	2	10.2	9.28	13.84	0	34	0.02	89.2	-	400
CDA River	2997	SSJD	7/24/97	-	4.5	1	11.2	8.84	13.68	7.01	34.2	0.02	84.7	-	397
CDA River	3197	DBSS	8/5/97	-	5.5	11	0.4	9.38	25.18	7.65	61.4	0.04	112.4	-	359
CDA River	3197	DBSS	8/5/97	-	5.5	10	1.1	9.29	24.06	7.58	53.3	0.03	109	-	361
CDA River	3197	DBSS	8/5/97	-	5.5	9	2.1	9.23	23.67	7.54	50.8	0.03	107.6	-	362
CDA River	3197	DBSS	8/5/97	-	5.5	8	3.2	9.1	23.53	7.5	46.6	0.03	105.8	-	363

CDA River	3197	DBSS	8/5/97	-	5.5	7	4.2	9.14	23.26	7.46	46.6	0.03	105.8	-	365
CDA River	3197	DBSS	8/5/97	-	5.5	6	5.2	9.22	23.15	7.39	49.1	0.03	106.3	-	366
CDA River	3197	DBSS	8/5/97	-	5.5	5	6	10.06	19.97	7.38	41.6	0.03	109.2	-	367
CDA River	3197	DBSS	8/5/97	-	5.5	4	7.1	9.71	19.4	7.31	42.1	0.03	0	-	369
CDA River	3197	DBSS	8/5/97	-	5.5	3	8	9.81	18.17	7.33	38.3	0.02	102.7	-	368
CDA River	3197	DBSS	8/5/97	-	5.5	2	8.9	10.49	17.23	7.35	36.1	0.02	107.7	-	366
CDA River	3197	DBSS	8/5/97	-	5.5	1	10	9.81	16.75	7.32	36.6	0.02	99.7	-	368
CDA River	3297	DBSS	8/13/97	-	6	10	0.2	8.82	23.38	7.74	54.8	0.04	102.8	-	363
CDA River	3297	DBSS	8/13/97	-	6	9	0.7	8.77	23.13	7.65	53.9	0.03	101.8	-	369
CDA River	3297	DBSS	8/13/97	-	6	8	1.7	8.74	22.74	7.66	47.7	0.03	100.7	-	368
CDA River	3297	DBSS	8/13/97	-	6	7	2.7	8.8	22.65	7.68	50.3	0.03	101.3	-	367
CDA River	3297	DBSS	8/13/97	-	6	6	3.7	8.88	22.63	7.66	52.9	0.03	102.2	-	367
CDA River	3297	DBSS	8/13/97	-	6	5	4.7	8.91	22.33	7.64	56	0.04	101.9	-	367
CDA River	3297	DBSS	8/13/97	-	6	4	5.6	8.95	22.24	7.58	61.9	0.04	102.2	-	368
CDA River	3297	DBSS	8/13/97	-	6	3	6.7	8.95	22.08	7.3	67.3	0.04	101.8	-	375
CDA River	3297	DBSS	8/13/97	-	6	2	7.7	8.67	19.88	7.15	46.5	0.03	94.5	-	381
CDA River	3297	DBSS	8/13/97	-	6	1	8.7	8.73	17.78	7.14	39.5	0.03	91.2	-	382
CDA River	3497	DBSS	8/27/97	-	6.1	13	0.3	9.13	20.86	7.53	52.7	0.03	101.5	-	346
CDA River	3497	DBSS	8/27/97	-	6.1	12	0.9	9.14	20.84	7.54	52.6	0.03	101.7	-	345
CDA River	3497	DBSS	8/27/97	-	6.1	11	2	9.14	20.84	7.54	52.5	0.03	101.7	-	344
CDA River	3497	DBSS	8/27/97	-	6.1	10	2.9	9.14	20.83	7.54	53.3	0.03	101.7	-	344
CDA River	3497	DBSS	8/27/97	-	6.1	9	4	9.14	20.81	7.52	55.2	0.04	101.6	-	345
CDA River	3497	DBSS	8/27/97	-	6.1	8	5.1	9.12	20.81	7.5	55.4	0.04	101.4	-	345
CDA River	3497	DBSS	8/27/97	-	6.1	7	6.1	9.11	20.77	7.48	58	0.04	101.2	-	346
CDA River	3497	DBSS	8/27/97	-	6.1	6	6.9	9.08	20.76	7.47	58.3	0.04	100.9	-	345
CDA River	3497	DBSS	8/27/97	-	6.1	5	7.9	9.09	20.72	7.44	60	0.04	100.9	-	346
CDA River	3497	DBSS	8/27/97	-	6.1	4	9	9.06	20.69	7.41	59.8	0.04	100.4	-	346
CDA River	3497	DBSS	8/27/97	-	6.1	3	10	9.03	20.67	7.39	59.1	0.04	100.2	-	345
CDA River	3497	DBSS	8/27/97	-	6.1	2	10.9	8.92	20.56	7.37	59	0.04	98.7	-	345

CDA River	3497	DBSS	8/27/97	-	6.1	1	12	8.08	16.69	7.11	42.1	0.03	82.6	-	359
CDA River	3797	ASRP	9/17/97	-	5.5	11	0.1	9.38	17.47	7.44	58.9	0.04	99.1	-	370
CDA River	3797	ASRP	9/17/97	-	5.5	10	1	9.32	17.49	7.43	58.9	0.04	98.4	-	369
CDA River	3797	ASRP	9/17/97	-	5.5	9	2	9.24	17.48	7.45	59.1	0.04	97.6	-	368
CDA River	3797	ASRP	9/17/97	-	5.5	8	3	9.35	17.49	7.42	59	0.04	98.8	-	369
CDA River	3797	ASRP	9/17/97	-	5.5	7	4	9.37	17.48	7.4	59.6	0.04	99	-	369
CDA River	3797	ASRP	9/17/97	-	5.5	6	5	9.35	17.49	7.39	59.3	0.04	98.8	-	369
CDA River	3797	ASRP	9/17/97	-	5.5	5	6	9.29	17.48	7.37	59.8	0.04	97.9	-	368
CDA River	3797	ASRP	9/17/97	-	5.5	4	7	9.28	17.43	7.34	61	0.04	97.8	-	368
CDA River	3797	ASRP	9/17/97	-	5.5	3	8	9.19	17.44	7.22	61	0.04	97	-	369
CDA River	3797	ASRP	9/17/97	-	5.5	2	9	8.59	9.82	7.04	50.3	0.03	76.9	-	380
CDA River	3797	ASRP	9/17/97	-	5.5	1	10.1	8.38	9.79	6.96	52.8	0.03	74.6	-	385
CDA River	3997	ASRA	9/29/97	-	6	11	0.2	9.72	16.01	7.37	52.6	0.03	99.4	-	414
CDA River	3997	ASRA	9/29/97	-	6	10	1.8	9.66	15.76	7.36	52.2	0.03	98.4	-	415
CDA River	3997	ASRA	9/29/97	-	6	9	2.8	9.66	15.71	7.33	53.3	0.03	98.3	-	415
CDA River	3997	ASRA	9/29/97	-	6	8	3.8	9.62	15.66	7.31	53.9	0.03	97.8	-	415
CDA River	3997	ASRA	9/29/97	-	6	7	4.8	9.59	15.61	7.29	53.4	0.03	97.4	-	415
CDA River	3997	ASRA	9/29/97	-	6	6	5.9	9.56	15.54	7.26	53.8	0.03	97	-	414
CDA River	3997	ASRA	9/29/97	-	6	5	6.8	9.62	15.52	7.23	56.7	0.04	97.5	-	414
CDA River	3997	ASRA	9/29/97	-	6	4	7.8	9.74	15.12	7.15	64.5	0.04	97.9	-	416
CDA River	3997	ASRA	9/29/97	-	6	3	8.8	9.62	14.99	7.03	68	0.04	96.5	-	419
CDA River	3997	ASRA	9/29/97	-	6	2	9.8	7.74	12.13	6.9	48.6	0.03	72.8	-	425
CDA River	3997	ASRA	9/29/97	-	6	1	10.8	7.85	10.26	6.97	44.5	0.03	70.6	-	424
CDA River	4297	DBAS	10/21/97	-	6	11	0.3	10.11	11.79	7.24	54.6	0.03	92.3	-	371
CDA River	4297	DBAS	10/21/97	-	6	10	1	10.1	11.81	7.27	54.6	0.03	92.2	-	369
CDA River	4297	DBAS	10/21/97	-	6	9	2	10.11	11.81	7.23	54.8	0.04	92.4	-	370
CDA River	4297	DBAS	10/21/97	-	6	8	3	10.08	11.81	7.24	54.7	0.04	92.1	-	369
CDA River	4297	DBAS	10/21/97	-	6	7	4.1	10.12	11.77	7.22	55.3	0.04	92.4	-	369

CDA River	4297	DBAS	10/21/97	-	6	6	5	10.13	11.74	7.19	55.7	0.04	92.4	-	370
CDA River	4297	DBAS	10/21/97	-	6	5	6	10.16	11.68	7.18	56.7	0.04	92.5	-	370
CDA River	4297	DBAS	10/21/97	-	6	4	7	10.17	11.59	7.17	57.9	0.04	92.5	-	369
CDA River	4297	DBAS	10/21/97	-	6	3	8	10.17	11.59	7.13	57.9	0.04	92.5	-	370
CDA River	4297	DBAS	10/21/97	-	6	2	9	10.22	11.41	7.1	63.2	0.04	92.5	-	371
CDA River	4297	DBAS	10/21/97	-	6	1	10	10.23	10.94	7.01	81.3	0.05	91.6	-	379
CDA River	4497	DBAS	11/4/97	-	3.8	11	0.4	10.87	10.02	7.35	53.9	0.03	95.5	54	392
CDA River	4497	DBAS	11/4/97	-	3.8	10	1.5	10.94	9.79	7.34	53.7	0.03	95.5	50	393
CDA River	4497	DBAS	11/4/97	-	3.8	9	2.5	10.87	9.79	7.37	53.7	0.03	94.9	146	392
CDA River	4497	DBAS	11/4/97	-	3.8	8	3.5	10.92	9.74	7.33	53.6	0.03	95.3	51	393
CDA River	4497	DBAS	11/4/97	-	3.8	7	4.5	10.88	9.68	7.28	53.7	0.03	94.8	102	395
CDA River	4497	DBAS	11/4/97	-	3.8	6	5.5	10.9	9.4	7.21	54.5	0.03	94.3	59	398
CDA River	4497	DBAS	11/4/97	-	3.8	5	6.5	10.91	9.38	7.26	54.6	0.03	94.3	121	395
CDA River	4497	DBAS	11/4/97	-	3.8	4	7.5	11	9.25	7.19	54.9	0.04	94.8	49	398
CDA River	4497	DBAS	11/4/97	-	3.8	3	8.5	11.23	8.55	7.14	57.3	0.04	95.1	42	401
CDA River	4497	DBAS	11/4/97	-	3.8	2	9.5	11.29	8.25	7.12	58.2	0.04	95	59	402
CDA River	4497	DBAS	11/4/97	-	3.8	1	10.5	11.26	8.17	7.1	58.6	0.04	94.5	536	404

Location	Phase	Sampler	Date	Time	Secchi	Sequence	Depth (m)	Dissolved Oxygen (mg/l)	Temperature (C)	pH	Conductivity (µs/cm)	TDS	Percent Saturation	Statime	Redox
Mid Lake	1597	ASSS	4/18/97	-	2	10	0.4	12.33	6.36	7.36	44.6	0.03	99.9	-	377
Mid Lake	1597	ASSS	4/18/97	-	2	9	1.4	12.36	6.3	7.35	45.2	0.03	*****	-	378
Mid Lake	1597	ASSS	4/18/97	-	2	8	2.6	12.27	6.33	7.35	44.4	0.03	99.4	-	379
Mid Lake	1597	ASSS	4/18/97	-	2	7	3.8	12.31	6.28	7.34	45.3	0.03	99.6	-	379
Mid Lake	1597	ASSS	4/18/97	-	2	6	5.1	12.32	6.3	7.34	45.4	0.03	99.7	-	379
Mid Lake	1597	ASSS	4/18/97	-	2	5	6.4	12.35	6.31	7.34	44.9	0.03	*****	-	379

Mid Lake	1597	ASSS	4/18/97	-	2	4	7.5	12.43	6.31	7.33	44.6	0.03	*****	-	379
Mid Lake	1597	ASSS	4/18/97	-	2	3	8.7	12.4	6.31	7.33	44.7	0.03	*****	-	378
Mid Lake	1597	ASSS	4/18/97	-	2	2	10.1	12.44	6.26	7.32	44.8	0.03	*****	-	379
Mid Lake	1597	ASSS	4/18/97	-	2	1	11.2	12.57	6.28	7.32	44.8	0.03	*****	-	378
Mid Lake	1997	DBAC	5/16/97	-	1.25	15	0.2	12.04	13.83	6.33	0.7	0	115.5	-	422
Mid Lake	1997	DBAC	5/16/97	-	1.25	14	1.5	11.12	10.32	7	28.2	0.02	98.5	-	392
Mid Lake	1997	DBAC	5/16/97	-	1.25	13	3	11.1	9.86	7	28.8	0.02	97.3	-	392
Mid Lake	1997	DBAC	5/16/97	-	1.25	12	4.5	11.16	9.79	6.99	28.3	0.02	97.5	-	392
Mid Lake	1997	DBAC	5/16/97	-	1.25	11	6	11.1	9.51	6.98	29	0.02	96.4	-	393
Mid Lake	1997	DBAC	5/16/97	-	1.25	10	7.5	11.04	9.25	6.98	29.4	0.02	95.3	-	392
Mid Lake	1997	DBAC	5/16/97	-	1.25	9	9	11.04	9.17	6.99	29.6	0.02	95	-	391
Mid Lake	1997	DBAC	5/16/97	-	1.25	8	10.5	11.08	8.92	7.02	30.7	0.02	94.8	-	389
Mid Lake	1997	DBAC	5/16/97	-	1.25	7	12	11.29	8.45	7.01	33.4	0.02	95.6	-	389
Mid Lake	1997	DBAC	5/16/97	-	1.25	6	13.5	11.32	7.81	6.99	34.7	0.02	94.3	-	390
Mid Lake	1997	DBAC	5/16/97	-	1.25	5	15	11.28	7.47	6.98	34.9	0.02	93.2	-	389
Mid Lake	1997	DBAC	5/16/97	-	1.25	4	16.5	11.25	6.66	6.96	37.2	0.02	91.1	-	390
Mid Lake	1997	DBAC	5/16/97	-	1.25	3	18	11.12	6.08	6.94	40.1	0.03	88.7	-	391
Mid Lake	1997	DBAC	5/16/97	-	1.25	2	19.5	11.15	5.69	6.93	45.9	0.03	88.1	-	391
Mid Lake	1997	DBAC	5/16/97	-	1.25	1	20.9	10.91	5.6	6.92	47.2	0.03	85.9	-	390
Mid Lake	2197	DBSS	5/29/97	-	1.7	13	0.2	11.32	12.63	7.06	27.6	0.02	105.9	-	351
Mid Lake	2197	DBSS	5/29/97	-	1.7	12	0.9	11.33	12.51	7.05	27.6	0.02	105.8	-	352
Mid Lake	2197	DBSS	5/29/97	-	1.7	11	2.5	11.19	10.72	7	26.8	0.02	100.2	-	353
Mid Lake	2197	DBSS	5/29/97	-	1.7	10	4	10.83	10.3	6.97	26.6	0.02	96	-	354
Mid Lake	2197	DBSS	5/29/97	-	1.7	9	5.5	10.7	10.07	6.96	26.4	0.02	94.4	-	353
Mid Lake	2197	DBSS	5/29/97	-	1.7	8	7	10.68	9.64	6.95	26.3	0.02	93.2	-	352
Mid Lake	2197	DBSS	5/29/97	-	1.7	7	8.5	10.71	9.45	6.95	26.5	0.02	93	-	349
Mid Lake	2197	DBSS	5/29/97	-	1.7	6	9.9	10.73	9.25	6.96	26.6	0.02	92.8	-	348
Mid Lake	2197	DBSS	5/29/97	-	1.7	5	12.5	10.75	8.84	6.95	27	0.02	92	-	346
Mid Lake	2197	DBSS	5/29/97	-	1.7	4	14.4	10.82	8.38	6.94	28.3	0.02	91.6	-	343

Mid Lake	2197	DBSS	5/29/97	-	1.7	3	16.1	10.73	7.96	6.92	30.2	0.02	89.9	-	342
Mid Lake	2197	DBSS	5/29/97	-	1.7	2	18.7	10.48	6.49	6.87	40.5	0.03	84.7	-	339
Mid Lake	2197	DBSS	5/29/97	-	1.7	1	20.2	10.17	6.71	6.87	40.7	0.03	82.6	-	332
Mid Lake	2397	DBAS	6/11/97	-	2	14	0.4	10.81	15.76	7.1	30.6	0.02	108.8	-	411
Mid Lake	2397	DBAS	6/11/97	-	2	13	1.3	10.86	15.58	7.11	30.7	0.02	108.9	-	411
Mid Lake	2397	DBAS	6/11/97	-	2	12	2.9	10.9	13.8	7.1	29.8	0.02	105.2	-	411
Mid Lake	2397	DBAS	6/11/97	-	2	11	4.3	10.86	13.09	7.05	29.4	0.02	103	-	414
Mid Lake	2397	DBAS	6/11/97	-	2	10	5.9	11.2	11.54	7.04	28.9	0.02	102.6	-	415
Mid Lake	2397	DBAS	6/11/97	-	2	9	7.4	11	10.45	7.02	29	0.02	98.2	-	416
Mid Lake	2397	DBAS	6/11/97	-	2	8	9	10.92	10.12	7	28.6	0.02	96.8	-	417
Mid Lake	2397	DBAS	6/11/97	-	2	7	10.5	10.84	9.71	6.99	28.6	0.02	95.2	-	417
Mid Lake	2397	DBAS	6/11/97	-	2	6	11.9	10.62	8.94	6.96	31.6	0.02	91.4	-	419
Mid Lake	2397	DBAS	6/11/97	-	2	5	13.4	10.6	8.42	6.95	34.4	0.02	90.1	-	420
Mid Lake	2397	DBAS	6/11/97	-	2	4	15	10.23	7.81	6.92	37.7	0.02	85.7	-	421
Mid Lake	2397	DBAS	6/11/97	-	2	3	16.4	10.36	7.05	6.92	41.9	0.03	85.2	-	421
Mid Lake	2397	DBAS	6/11/97	-	2	2	17.9	10.31	6.82	6.92	43.2	0.03	84.3	-	425
Mid Lake	2397	DBAS	6/11/97	-	2	1	19.5	10.02	6.99	6.93	43.2	0.03	82.3	-	424
Mid Lake	2597	DBSS	6/26/97	-	3	13	0.4	10.7	15.09	7.14	31.7	0.02	106.1	-	405
Mid Lake	2597	DBSS	6/26/97	-	3	12	1.9	10.69	14.89	7.12	31.8	0.02	105.4	-	405
Mid Lake	2597	DBSS	6/26/97	-	3	11	3.5	10.74	14.36	7.1	31.9	0.02	104.8	-	406
Mid Lake	2597	DBSS	6/26/97	-	3	10	5	10.68	13.32	6.97	30.2	0.02	101.8	-	410
Mid Lake	2597	DBSS	6/26/97	-	3	9	6.6	10.73	12.33	6.96	30.5	0.02	100	-	410
Mid Lake	2597	DBSS	6/26/97	-	3	8	8.1	10.36	11.45	6.92	30.4	0.02	94.6	-	411
Mid Lake	2597	DBSS	6/26/97	-	3	7	9.6	10.26	10.59	6.89	29.6	0.02	91.8	-	412
Mid Lake	2597	DBSS	6/26/97	-	3	6	10.9	10.14	9.27	6.86	30.8	0.02	88	-	413
Mid Lake	2597	DBSS	6/26/97	-	3	5	12.5	10.11	8.25	6.83	34.6	0.02	85.6	-	414
Mid Lake	2597	DBSS	6/26/97	-	3	4	14	9.57	7.53	6.81	38	0.02	79.6	-	414
Mid Lake	2597	DBSS	6/26/97	-	3	3	15.6	9.44	7.05	6.8	40.5	0.03	77.7	-	413
Mid Lake	2597	DBSS	6/26/97	-	3	2	17	9.03	6.82	6.8	42.4	0.03	73.8	-	411

Mid Lake	2597	DBSS	6/26/97	-	3	1	18.6	9.08	6.81	6.86	42.4	0.03	74.1	-	407
Mid Lake	2797	DBSS	7/8/97	-	2.4	13	0.3	9.95	19.4	7.02	35.5	0.02	*****	-	444
Mid Lake	2797	DBSS	7/8/97	-	2.4	12	1.7	10.11	17.84	7	34.8	0.02	*****	-	445
Mid Lake	2797	DBSS	7/8/97	-	2.4	11	3.3	10.29	17.17	6.92	35	0.02	*****	-	447
Mid Lake	2797	DBSS	7/8/97	-	2.4	10	4.8	10.55	14.84	6.81	38.2	0.02	*****	-	451
Mid Lake	2797	DBSS	7/8/97	-	2.4	9	6.2	10.41	13.81	6.77	35.6	0.02	99.9	-	451
Mid Lake	2797	DBSS	7/8/97	-	2.4	8	7.8	10.26	13.02	6.7	34.6	0.02	96.7	-	451
Mid Lake	2797	DBSS	7/8/97	-	2.4	7	9.2	10.03	12.2	6.66	33.4	0.02	92.8	-	451
Mid Lake	2797	DBSS	7/8/97	-	2.4	6	10.8	9.78	10.8	6.6	33.3	0.02	87.6	-	450
Mid Lake	2797	DBSS	7/8/97	-	2.4	5	12.2	9.53	9.76	6.57	34.5	0.02	83.3	-	450
Mid Lake	2797	DBSS	7/8/97	-	2.4	4	13.7	9.55	8.95	6.54	36.6	0.02	82	-	448
Mid Lake	2797	DBSS	7/8/97	-	2.4	3	15.3	9.33	8.46	6.52	38.2	0.02	79.1	-	447
Mid Lake	2797	DBSS	7/8/97	-	2.4	2	16.6	9.28	7.91	6.49	39.8	0.03	77.7	-	445
Mid Lake	2797	DBSS	7/8/97	-	2.4	1	18.2	9.37	7.51	6.47	42	0.03	77.6	-	447
Mid Lake	2997	SSJD	7/24/97	-	4.5	13	1.3	9.57	21.01	7.48	38.8	0.02	*****	-	394
Mid Lake	2997	SSJD	7/24/97	-	4.5	12	2.8	9.92	20.47	7.43	37.9	0.02	*****	-	393
Mid Lake	2997	SSJD	7/24/97	-	4.5	11	4.3	10.52	17.56	7.27	37.7	0.02	*****	-	400
Mid Lake	2997	SSJD	7/24/97	-	4.5	10	5.8	10.49	16.73	7.18	36.2	0.02	*****	-	402
Mid Lake	2997	SSJD	7/24/97	-	4.5	9	7.3	10.22	15.79	7.03	35.2	0.02	*****	-	406
Mid Lake	2997	SSJD	7/24/97	-	4.5	8	8.8	9.96	15.01	6.95	34.4	0.02	98.2	-	408
Mid Lake	2997	SSJD	7/24/97	-	4.5	7	10.3	9.14	13.61	6.84	33.2	0.02	87.5	-	411
Mid Lake	2997	SSJD	7/24/97	-	4.5	6	11.8	9.33	11.29	6.79	33.2	0.02	84.6	-	414
Mid Lake	2997	SSJD	7/24/97	-	4.5	5	13.3	8.89	9.48	6.78	35.2	0.02	77.3	-	414
Mid Lake	2997	SSJD	7/24/97	-	4.5	4	14.3	9.1	8.22	6.8	37.7	0.02	76.7	-	413
Mid Lake	2997	SSJD	7/24/97	-	4.5	3	15.8	9.07	8.17	6.83	37.8	0.02	76.4	-	411
Mid Lake	2997	SSJD	7/24/97	-	4.5	2	17.3	9.15	7.95	6.87	38.3	0.02	76.6	-	414
Mid Lake	2997	SSJD	7/24/97	-	4.5	1	18.8	9.24	7.46	6.93	39.7	0.03	76.2	-	422
Mid Lake	3197	DBSS	8/5/97	-	5.6	14	0.4	9.23	24.49	7.8	41.3	0.03	109.2	-	345

Mid Lake	3197	DBSS	8/5/97	-	5.6	13	1	9.29	23.73	7.7	41.5	0.03	108.4	-	348
Mid Lake	3197	DBSS	8/5/97	-	5.6	12	2.6	9.34	22.74	7.49	43.4	0.03	106.9	-	354
Mid Lake	3197	DBSS	8/5/97	-	5.6	11	4	9.57	21.92	7.41	49.1	0.03	107.8	-	357
Mid Lake	3197	DBSS	8/5/97	-	5.6	10	5.5	9.89	20.76	7.43	41.8	0.03	108.9	-	354
Mid Lake	3197	DBSS	8/5/97	-	5.6	9	7	10.15	19.78	7.29	39.8	0.03	109.7	-	356
Mid Lake	3197	DBSS	8/5/97	-	5.6	8	8.6	10.13	17.86	7.05	36.9	0.02	105.4	-	361
Mid Lake	3197	DBSS	8/5/97	-	5.6	7	10	9.33	15.01	6.96	34.5	0.02	91.3	-	364
Mid Lake	3197	DBSS	8/5/97	-	5.6	6	11.5	8.92	12.66	6.9	34.4	0.02	82.9	-	364
Mid Lake	3197	DBSS	8/5/97	-	5.6	5	13.1	8.74	10.18	6.88	35.9	0.02	76.7	-	361
Mid Lake	3197	DBSS	8/5/97	-	5.6	4	14.5	8.58	9.05	6.91	37.2	0.02	73.3	-	357
Mid Lake	3197	DBSS	8/5/97	-	5.6	3	16.1	8.76	8.04	6.94	38.9	0.02	73	-	354
Mid Lake	3197	DBSS	8/5/97	-	5.6	2	17.5	8.83	7.94	6.99	39	0.03	73.5	-	347
Mid Lake	3197	DBSS	8/5/97	-	5.6	1	18.9	8.88	8.18	7.08	39	0.03	74	-	374
Mid Lake	3297	DBSS	8/13/97	-	6.5	13	0.5	8.7	22.93	7.65	45.4	0.03	100.6	-	361
Mid Lake	3297	DBSS	8/13/97	-	6.5	12	2	8.72	22.56	7.6	45.2	0.03	100.1	-	362
Mid Lake	3297	DBSS	8/13/97	-	6.5	11	3.5	8.77	22.29	7.56	45	0.03	100.2	-	362
Mid Lake	3297	DBSS	8/13/97	-	6.5	10	5	8.81	22.12	7.44	45	0.03	100.4	-	365
Mid Lake	3297	DBSS	8/13/97	-	6.5	9	6.5	8.87	21.44	7.28	49.4	0.03	99.7	-	370
Mid Lake	3297	DBSS	8/13/97	-	6.5	8	8	9.05	20.09	7.19	42.6	0.03	99.1	-	373
Mid Lake	3297	DBSS	8/13/97	-	6.5	7	9.5	9.2	18.61	7.05	38.7	0.02	97.7	-	374
Mid Lake	3297	DBSS	8/13/97	-	6.5	6	11	8.12	14.03	6.91	35.4	0.02	78.3	-	379
Mid Lake	3297	DBSS	8/13/97	-	6.5	5	12.5	7.96	10.62	6.9	36.8	0.02	71.1	-	380
Mid Lake	3297	DBSS	8/13/97	-	6.5	4	14	7.79	9.22	6.93	38.5	0.02	67.3	-	378
Mid Lake	3297	DBSS	8/13/97	-	6.5	3	15.5	7.71	8.49	6.97	39.3	0.03	65.4	-	376
Mid Lake	3297	DBSS	8/13/97	-	6.5	2	17	7.29	8.15	7.08	40.1	0.03	61.3	-	370
Mid Lake	3297	DBSS	8/13/97	-	6.5	1	18.7	8.21	7.69	6.92	41.3	0.03	68.3	-	393
Mid Lake	3497	DBSS	8/27/97	-	8	13	0.4	9.08	21.49	7.54	50.5	0.03	102.3	-	353
Mid Lake	3497	DBSS	8/27/97	-	8	12	1.1	9.08	21.48	7.54	50.4	0.03	102.2	-	353
Mid Lake	3497	DBSS	8/27/97	-	8	11	2.4	9.08	21.42	7.53	50.4	0.03	102.1	-	353

Mid Lake	3497	DBSS	8/27/97	-	8	10	4.1	9.09	21.28	7.52	50.7	0.03	102	-	353
Mid Lake	3497	DBSS	8/27/97	-	8	9	5.6	9.1	21.18	7.5	50.7	0.03	101.9	-	353
Mid Lake	3497	DBSS	8/27/97	-	8	8	6.9	9.1	21.11	7.46	50.7	0.03	101.7	-	354
Mid Lake	3497	DBSS	8/27/97	-	8	7	8.5	8.96	21.05	7.33	49.9	0.03	100.1	-	358
Mid Lake	3497	DBSS	8/27/97	-	8	6	10	8.48	20.3	7.17	48.7	0.03	93.4	-	363
Mid Lake	3497	DBSS	8/27/97	-	8	5	11.5	8.19	19.32	7.01	45.8	0.03	88.4	-	370
Mid Lake	3497	DBSS	8/27/97	-	8	4	12.9	8.39	15.84	6.91	40.1	0.03	84.2	-	375
Mid Lake	3497	DBSS	8/27/97	-	8	3	14.4	6.45	12.02	6.88	40.9	0.03	59.5	-	379
Mid Lake	3497	DBSS	8/27/97	-	8	2	15.9	6.81	9.48	6.95	42.1	0.03	59.2	-	377
Mid Lake	3497	DBSS	8/27/97	-	8	1	17.4	6.69	9.22	7.07	42.6	0.03	57.8	-	373
Mid Lake	3797	ASRP	9/17/97	-	5	11	0.2	8.99	16.75	7.02	49.9	0.03	93.5	-	384
Mid Lake	3797	ASRP	9/17/97	-	5	10	1	8.9	16.75	6.94	49.9	0.03	92.6	-	386
Mid Lake	3797	ASRP	9/17/97	-	5	9	3	8.75	16.43	6.79	49.7	0.03	90.4	-	392
Mid Lake	3797	ASRP	9/17/97	-	5	8	5	8.08	10.87	6.71	43.5	0.03	73.4	-	398
Mid Lake	3797	ASRP	9/17/97	-	5	7	7	8.27	9.37	6.69	42.7	0.03	72.8	-	399
Mid Lake	3797	ASRP	9/17/97	-	5	6	9	8.19	8.88	6.7	43.4	0.03	71.3	-	399
Mid Lake	3797	ASRP	9/17/97	-	5	5	10.9	9	7.66	6.71	43.9	0.03	76.1	-	398
Mid Lake	3797	ASRP	9/17/97	-	5	4	13	8.96	7.58	6.74	44.1	0.03	75.6	-	396
Mid Lake	3797	ASRP	9/17/97	-	5	3	15	9.05	7.43	6.75	44.2	0.03	76.2	-	395
Mid Lake	3797	ASRP	9/17/97	-	5	2	16.9	9.45	7.12	6.78	44.6	0.03	78.8	-	393
Mid Lake	3797	ASRP	9/17/97	-	5	1	18.6	9.41	6.89	6.84	45.1	0.03	78	-	390
Mid Lake	3997	ASRA	9/29/97	-	6.5	10	0.5	9.59	16.46	7.17	50.6	0.03	99.2	-	407
Mid Lake	3997	ASRA	9/29/97	-	6.5	9	2.7	9.45	15.86	7.07	50.1	0.03	96.5	-	411
Mid Lake	3997	ASRA	9/29/97	-	6.5	8	4.6	9.24	15.24	6.92	50.3	0.03	93.1	-	417
Mid Lake	3997	ASRA	9/29/97	-	6.5	7	6.6	8.62	13.82	6.82	49.6	0.03	84.2	-	421
Mid Lake	3997	ASRA	9/29/97	-	6.5	6	8.6	8.64	12.23	6.78	46.7	0.03	81.4	-	423
Mid Lake	3997	ASRA	9/29/97	-	6.5	5	10.6	8.58	9.81	6.74	42.5	0.03	76.4	-	425
Mid Lake	3997	ASRA	9/29/97	-	6.5	4	12.6	8.65	8.46	6.74	42	0.03	74.5	-	424
Mid Lake	3997	ASRA	9/29/97	-	6.5	3	14.6	9.04	7.79	6.74	42	0.03	77.4	-	424

Mid Lake	3997	ASRA	9/29/97	-	6.5	2	16.6	8.92	7.46	6.81	42.2	0.03	75	-	420
Mid Lake	3997	ASRA	9/29/97	-	6.5	1	18.6	8.91	7.47	6.87	42.1	0.03	75	-	417
Mid Lake	4297	DBAS	10/22/97	-	4.6	10	0.2	10.5	11.58	7.09	49	0.03	96	-	413
Mid Lake	4297	DBAS	10/22/97	-	4.6	9	2	10.48	11.59	7.1	48.9	0.03	95.8	-	412
Mid Lake	4297	DBAS	10/22/97	-	4.6	8	4	10.47	11.59	7.06	49.1	0.03	95.7	-	413
Mid Lake	4297	DBAS	10/22/97	-	4.6	7	6	10.45	11.58	7.02	49.1	0.03	95.5	-	414
Mid Lake	4297	DBAS	10/22/97	-	4.6	6	8	10.43	11.59	7	49.2	0.03	95.3	-	414
Mid Lake	4297	DBAS	10/22/97	-	4.6	5	10	10.42	11.58	6.94	49.2	0.03	95.2	-	415
Mid Lake	4297	DBAS	10/22/97	-	4.6	4	12	10.4	11.56	6.88	49.2	0.03	95	-	417
Mid Lake	4297	DBAS	10/22/97	-	4.6	3	14	10.37	11.56	6.82	49.2	0.03	94.8	-	418
Mid Lake	4297	DBAS	10/22/97	-	4.6	2	16	10.21	11.51	6.69	49.3	0.03	93.2	-	421
Mid Lake	4297	DBAS	10/22/97	-	4.6	1	18	4.53	8.53	6.32	45.1	0.03	38.5	-	434
Mid Lake	4497	DBAS	11/4/97	-	4	13	0.5	10.64	10.18	7.08	53.4	0.03	93.8	104	396
Mid Lake	4497	DBAS	11/4/97	-	4	12	2	10.49	9.51	7.02	53.4	0.03	91	56	398
Mid Lake	4497	DBAS	11/4/97	-	4	11	3.5	10.25	9.4	6.97	53.7	0.03	88.7	55	401
Mid Lake	4497	DBAS	11/4/97	-	4	10	5	10.05	9.32	6.94	53.7	0.03	86.7	49	401
Mid Lake	4497	DBAS	11/4/97	-	4	9	6.5	9.89	9.24	6.9	53.4	0.03	85.2	120	402
Mid Lake	4497	DBAS	11/4/97	-	4	8	8	8.86	9.01	6.85	52.9	0.03	75.9	119	403
Mid Lake	4497	DBAS	11/4/97	-	4	7	9.5	9.57	8.71	6.85	54.6	0.03	81.4	102	403
Mid Lake	4497	DBAS	11/4/97	-	4	6	11	9.28	8.6	6.84	53.2	0.03	78.8	58	403
Mid Lake	4497	DBAS	11/4/97	-	4	5	12.5	9.13	8.5	6.79	52.6	0.03	77.3	102	405
Mid Lake	4497	DBAS	11/4/97	-	4	4	14	9.01	8.43	6.75	52.1	0.03	76.2	227	406
Mid Lake	4497	DBAS	11/4/97	-	4	3	15.5	8.76	7.68	6.72	47.9	0.03	72.6	51	407
Mid Lake	4497	DBAS	11/4/97	-	4	2	17	8.81	7.38	6.72	46.3	0.03	72.6	58	408
Mid Lake	4497	DBAS	11/4/97	-	4	1	18.4	8.78	7.27	6.75	46.2	0.03	72.1	713	407
Location	Phase	Sampler	Date	Time	Secchi	Sequence	Depth (m)	Dissolved Oxygen (mg/l)	Temperature (C)	pH	Conductivity (µs/cm)	TDS	Percent Saturation	Statime	Redox
Carey Bay	1597	ASSS	4/18/97	-	1.9	10	0.4	12.31	6.22	7.43	38.4	0.02	99.4	-	374
Carey Bay	1597	ASSS	4/18/97	-	1.9	9	1	12.3	6.07	7.41	38.5	0.02	99	-	375

Carey Bay	1597	ASSS	4/18/97	-	1.9	8	2	12.29	5.77	7.41	38.2	0.02	98.1	-	375
Carey Bay	1597	ASSS	4/18/97	-	1.9	7	3.1	12.21	5.64	7.41	38.4	0.02	97.2	-	375
Carey Bay	1597	ASSS	4/18/97	-	1.9	6	4.3	12.2	5.6	7.4	38.3	0.02	97	-	375
Carey Bay	1597	ASSS	4/18/97	-	1.9	5	5.5	12.14	5.57	7.39	38.2	0.02	96.6	-	375
Carey Bay	1597	ASSS	4/18/97	-	1.9	4	6.8	12.15	5.56	7.39	38.3	0.02	96.5	-	375
Carey Bay	1597	ASSS	4/18/97	-	1.9	3	8.1	12.12	5.54	7.38	38.4	0.02	96.2	-	375
Carey Bay	1597	ASSS	4/18/97	-	1.9	2	9.3	12.12	5.49	7.38	38.4	0.02	96.1	-	374
Carey Bay	1597	ASSS	4/18/97	-	1.9	1	10.5	12.09	5.47	7.37	38.5	0.02	95.8	-	374
Carey Bay	1997	DBAC	5/16/97	-	1.6	12	0.2	11.52	15.54	7.11	35.1	0.02	114.7	-	389
Carey Bay	1997	DBAC	5/16/97	-	1.6	11	1	11.94	11.22	7.15	33.5	0.02	107.9	-	390
Carey Bay	1997	DBAC	5/16/97	-	1.6	10	2	12.11	10.1	7.1	33.6	0.02	106.7	-	392
Carey Bay	1997	DBAC	5/16/97	-	1.6	9	3.5	11.57	9.45	7.05	32.8	0.02	100.3	-	395
Carey Bay	1997	DBAC	5/16/97	-	1.6	8	5	11.39	9.02	7.02	33.9	0.02	97.7	-	395
Carey Bay	1997	DBAC	5/16/97	-	1.6	7	6.5	11.37	8.88	7.01	34.2	0.02	97.2	-	396
Carey Bay	1997	DBAC	5/16/97	-	1.6	6	8	11.34	8.69	7.01	34.6	0.02	96.6	-	395
Carey Bay	1997	DBAC	5/16/97	-	1.6	5	9.5	11.36	8.33	7	34.4	0.02	95.8	-	395
Carey Bay	1997	DBAC	5/16/97	-	1.6	4	11	11.32	8.07	6.99	34.8	0.02	95	-	395
Carey Bay	1997	DBAC	5/16/97	-	1.6	3	12.5	11.24	7.83	6.98	34.8	0.02	93.7	-	395
Carey Bay	1997	DBAC	5/16/97	-	1.6	2	14	10.99	7.61	6.96	35.2	0.02	91	-	396
Carey Bay	1997	DBAC	5/16/97	-	1.6	1	15.3	10.38	6.86	6.95	37.3	0.02	84.5	-	396
Carey Bay	2197	DBSS	5/29/97	-	1.4	14	0.3	10.67	14.15	6.97	28.5	0.02	103.3	-	366
Carey Bay	2197	DBSS	5/29/97	-	1.4	13	1	11.21	10.91	6.99	26.2	0.02	100.9	-	366
Carey Bay	2197	DBSS	5/29/97	-	1.4	12	2.1	10.88	10.38	6.97	26.3	0.02	96.7	-	367
Carey Bay	2197	DBSS	5/29/97	-	1.4	11	3.1	10.63	10.2	6.94	26.3	0.02	94.1	-	368
Carey Bay	2197	DBSS	5/29/97	-	1.4	10	4.1	10.64	9.86	6.91	26.2	0.02	93.3	-	369
Carey Bay	2197	DBSS	5/29/97	-	1.4	9	5.1	10.43	9.79	6.92	26.4	0.02	91.3	-	368
Carey Bay	2197	DBSS	5/29/97	-	1.4	8	6.2	10.43	9.74	6.93	26.5	0.02	91.3	-	368
Carey Bay	2197	DBSS	5/29/97	-	1.4	7	7.2	10.61	9.64	6.92	26.3	0.02	92.6	-	367
Carey Bay	2197	DBSS	5/29/97	-	1.4	6	8.2	10.61	9.53	6.94	26.4	0.02	92.4	-	366

Carey Bay	2197	DBSS	5/29/97	-	1.4	5	9.2	10.64	9.43	6.93	26.4	0.02	92.4	-	366
Carey Bay	2197	DBSS	5/29/97	-	1.4	4	10.2	10.64	9.3	6.93	26.5	0.02	92.1	-	366
Carey Bay	2197	DBSS	5/29/97	-	1.4	3	11.2	10.61	9.12	6.94	26.7	0.02	91.5	-	365
Carey Bay	2197	DBSS	5/29/97	-	1.4	2	12.3	10.56	8.86	6.93	27.5	0.02	90.3	-	365
Carey Bay	2197	DBSS	5/29/97	-	1.4	1	13.2	10.64	8.66	6.94	27.8	0.02	90.7	-	364
Carey Bay	2397	DBAS	6/11/97	-	2	14	0.7	10.87	15.48	7.17	31.2	0.02	108.7	-	411
Carey Bay	2397	DBAS	6/11/97	-	2	13	1.6	11.2	14.35	7.1	30.9	0.02	109.3	-	414
Carey Bay	2397	DBAS	6/11/97	-	2	12	2.5	11.22	11.79	7.09	29.1	0.02	103.4	-	415
Carey Bay	2397	DBAS	6/11/97	-	2	11	3.5	11.32	11.3	7.07	28.9	0.02	103.2	-	416
Carey Bay	2397	DBAS	6/11/97	-	2	10	4.5	11.27	11.22	7.06	28.8	0.02	102.5	-	417
Carey Bay	2397	DBAS	6/11/97	-	2	9	5.5	10.97	10.99	7.03	28.8	0.02	99.2	-	418
Carey Bay	2397	DBAS	6/11/97	-	2	8	6.5	10.9	10.38	7.01	28.8	0.02	97.2	-	419
Carey Bay	2397	DBAS	6/11/97	-	2	7	7.5	10.84	10.17	7.01	28.7	0.02	96.2	-	419
Carey Bay	2397	DBAS	6/11/97	-	2	6	8.5	10.69	9.91	6.98	28.9	0.02	94.2	-	420
Carey Bay	2397	DBAS	6/11/97	-	2	5	9.5	10.63	9.45	6.98	29.4	0.02	92.7	-	420
Carey Bay	2397	DBAS	6/11/97	-	2	4	10.5	10.61	9.22	6.97	30.2	0.02	92	-	421
Carey Bay	2397	DBAS	6/11/97	-	2	3	11.4	10.58	8.99	6.97	31.1	0.02	91.2	-	421
Carey Bay	2397	DBAS	6/11/97	-	2	2	12.5	10.56	8.84	6.96	31.9	0.02	90.6	-	421
Carey Bay	2397	DBAS	6/11/97	-	2	1	13.4	10.14	8.11	6.95	36.1	0.02	85.6	-	423
Carey Bay	2597	DBSS	6/26/97	-	2.5	12	0.3	10.81	14.98	7.2	30.4	0.02	106.8	-	427
Carey Bay	2597	DBSS	6/26/97	-	2.5	11	0.9	10.81	14.93	7.17	30.4	0.02	106.8	-	429
Carey Bay	2597	DBSS	6/26/97	-	2.5	10	1.8	10.85	14.49	7.11	30.2	0.02	106.1	-	432
Carey Bay	2597	DBSS	6/26/97	-	2.5	9	2.8	10.91	13.73	7.12	29.9	0.02	104.9	-	431
Carey Bay	2597	DBSS	6/26/97	-	2.5	8	3.8	10.94	13.11	7.1	29.8	0.02	103.8	-	432
Carey Bay	2597	DBSS	6/26/97	-	2.5	7	4.8	10.91	12.73	7.06	29.6	0.02	102.6	-	434
Carey Bay	2597	DBSS	6/26/97	-	2.5	6	5.7	10.84	12.33	6.99	29.8	0.02	101.1	-	436
Carey Bay	2597	DBSS	6/26/97	-	2.5	5	6.8	10.61	11.74	6.94	29.5	0.02	97.5	-	438
Carey Bay	2597	DBSS	6/26/97	-	2.5	4	7.7	10.42	10.66	6.92	29.3	0.02	93.4	-	440
Carey Bay	2597	DBSS	6/26/97	-	2.5	3	8.7	10.01	10.1	6.89	29.9	0.02	88.6	-	441

Carey Bay	2597	DBSS	6/26/97	-	2.5	2	9.7	9.88	9.97	6.91	30.4	0.02	87.1	-	440
Carey Bay	2597	DBSS	6/26/97	-	2.5	1	10.6	9.78	9.66	6.92	31.3	0.02	85.6	-	440
Carey Bay	2797	DBSS	7/8/97	-	2.9	13	0.3	10.09	18.7	7.18	36.8	0.02	*****	-	444
Carey Bay	2797	DBSS	7/8/97	-	2.9	12	1.1	10.09	18.66	7.17	36.9	0.02	*****	-	444
Carey Bay	2797	DBSS	7/8/97	-	2.9	11	1.9	10.24	17.47	7.13	36.3	0.02	*****	-	446
Carey Bay	2797	DBSS	7/8/97	-	2.9	10	2.9	10.39	16.41	7.09	37.1	0.02	*****	-	449
Carey Bay	2797	DBSS	7/8/97	-	2.9	9	3.9	10.25	16.19	7.04	37.4	0.02	*****	-	450
Carey Bay	2797	DBSS	7/8/97	-	2.9	8	5	10.47	15.01	7.01	36.9	0.02	*****	-	452
Carey Bay	2797	DBSS	7/8/97	-	2.9	7	5.9	10.37	14.42	6.97	35.9	0.02	*****	-	454
Carey Bay	2797	DBSS	7/8/97	-	2.9	6	7.1	10.16	13.17	6.94	34.3	0.02	96.2	-	455
Carey Bay	2797	DBSS	7/8/97	-	2.9	5	8	10	12.81	6.93	34.2	0.02	93.9	-	456
Carey Bay	2797	DBSS	7/8/97	-	2.9	4	9	9.91	12.15	6.91	33.4	0.02	91.7	-	457
Carey Bay	2797	DBSS	7/8/97	-	2.9	3	10	9.55	11.25	6.9	33	0.02	86.5	-	458
Carey Bay	2797	DBSS	7/8/97	-	2.9	2	11	9.03	9.98	6.91	34.7	0.02	79.4	-	460
Carey Bay	2797	DBSS	7/8/97	-	2.9	1	11.9	9.2	9.77	6.97	35.1	0.02	80.4	-	457
Carey Bay	2997	SSJD	7/24/97	-	5.5	14	0.3	9.94	20.53	7.53	40	0.03	*****	-	408
Carey Bay	2997	SSJD	7/24/97	-	5.5	13	0.8	9.99	20.55	7.51	40	0.03	*****	-	408
Carey Bay	2997	SSJD	7/24/97	-	5.5	12	1.8	10.43	19.63	7.5	39.7	0.03	*****	-	410
Carey Bay	2997	SSJD	7/24/97	-	5.5	11	2.8	10.53	18.87	7.48	38.4	0.02	*****	-	410
Carey Bay	2997	SSJD	7/24/97	-	5.5	10	3.7	10.45	18.25	7.34	38.9	0.02	*****	-	414
Carey Bay	2997	SSJD	7/24/97	-	5.5	9	4.8	10.36	17.29	7.24	37.6	0.02	*****	-	418
Carey Bay	2997	SSJD	7/24/97	-	5.5	8	5.8	10.3	16.48	7.19	36.7	0.02	*****	-	419
Carey Bay	2997	SSJD	7/24/97	-	5.5	7	6.7	10.29	16.07	7.16	36	0.02	*****	-	419
Carey Bay	2997	SSJD	7/24/97	-	5.5	6	7.9	9.77	15.61	7.07	35.2	0.02	97.7	-	422
Carey Bay	2997	SSJD	7/24/97	-	5.5	5	8.4	10.09	15.67	7.02	35.3	0.02	*****	-	422
Carey Bay	2997	SSJD	7/24/97	-	5.5	4	9.4	9.66	14.52	6.98	33.7	0.02	94.3	-	423
Carey Bay	2997	SSJD	7/24/97	-	5.5	3	10.4	9.48	13.88	6.94	33.3	0.02	91.2	-	424
Carey Bay	2997	SSJD	7/24/97	-	5.5	2	11.4	8.87	12.67	6.91	33.1	0.02	83	-	426
Carey Bay	2997	SSJD	7/24/97	-	5.5	1	12.4	7.87	10.18	6.93	36.1	0.02	69.6	-	427

Carey Bay	3197	DBSS	8/5/97	-	5.3	12	0.3	9.47	23.01	7.6	43.4	0.03	109	-	364
Carey Bay	3197	DBSS	8/5/97	-	5.3	11	1	9.51	22.72	7.59	43.5	0.03	108.8	-	365
Carey Bay	3197	DBSS	8/5/97	-	5.3	10	2.1	9.61	22.15	7.53	43.8	0.03	108.7	-	366
Carey Bay	3197	DBSS	8/5/97	-	5.3	9	3	9.66	21.88	7.5	42.6	0.03	108.8	-	367
Carey Bay	3197	DBSS	8/5/97	-	5.3	8	3.9	9.81	21.53	7.47	43.8	0.03	109.7	-	368
Carey Bay	3197	DBSS	8/5/97	-	5.3	7	4.9	9.89	21.11	7.42	43	0.03	109.5	-	369
Carey Bay	3197	DBSS	8/5/97	-	5.3	6	6	9.91	20.84	7.34	41.5	0.03	109.4	-	371
Carey Bay	3197	DBSS	8/5/97	-	5.3	5	6.9	9.66	19.4	7.27	39.5	0.03	103.6	-	374
Carey Bay	3197	DBSS	8/5/97	-	5.3	4	7.9	10.34	18.36	7.26	37.2	0.02	108.6	-	373
Carey Bay	3197	DBSS	8/5/97	-	5.3	3	9	9.68	17.1	7.14	36.6	0.02	99.1	-	377
Carey Bay	3197	DBSS	8/5/97	-	5.3	2	10	8.87	15.07	7.06	35.5	0.02	86.9	-	380
Carey Bay	3197	DBSS	8/5/97	-	5.3	1	11	7.89	14.19	7.1	35.6	0.02	75.9	-	381
Carey Bay	3297	DBSS	8/14/97	-	8	13	0.4	8.59	22.47	7.5	45.1	0.03	98.4	-	378
Carey Bay	3297	DBSS	8/14/97	-	8	12	1.4	8.6	22.43	7.54	45.1	0.03	98.5	-	376
Carey Bay	3297	DBSS	8/14/97	-	8	11	2.4	8.65	22.33	7.47	45.1	0.03	98.9	-	377
Carey Bay	3297	DBSS	8/14/97	-	8	10	3.3	8.67	22.22	7.42	45.3	0.03	98.8	-	378
Carey Bay	3297	DBSS	8/14/97	-	8	9	4.3	8.66	21.9	7.3	45.9	0.03	98.2	-	383
Carey Bay	3297	DBSS	8/14/97	-	8	8	5.3	8.61	21.55	7.25	45.7	0.03	97	-	385
Carey Bay	3297	DBSS	8/14/97	-	8	7	6.4	8.62	21.19	7.2	45.6	0.03	96.4	-	386
Carey Bay	3297	DBSS	8/14/97	-	8	6	7.4	8.39	20.53	7.15	43	0.03	92.6	-	388
Carey Bay	3297	DBSS	8/14/97	-	8	5	8.4	8.64	19.56	7.01	40.1	0.03	93.5	-	391
Carey Bay	3297	DBSS	8/14/97	-	8	4	9.4	8.27	18.94	6.95	39.7	0.03	88.4	-	393
Carey Bay	3297	DBSS	8/14/97	-	8	3	10.4	8.26	18.41	6.88	38.9	0.02	87.5	-	395
Carey Bay	3297	DBSS	8/14/97	-	8	2	11.5	7.89	15.96	6.83	36.5	0.02	79.3	-	398
Carey Bay	3297	DBSS	8/14/97	-	8	1	12.4	6.74	13.07	6.82	37.1	0.02	62.7	-	401
Carey Bay	3497	DBSS	8/27/97	-	8.2	14	0.3	8.97	21.76	7.5	49.7	0.03	101.6	-	356
Carey Bay	3497	DBSS	8/27/97	-	8.2	13	0.9	8.98	21.74	7.52	49.6	0.03	101.6	-	355
Carey Bay	3497	DBSS	8/27/97	-	8.2	12	1.9	8.99	21.67	7.5	49.6	0.03	101.6	-	356

Carey Bay	3497	DBSS	8/27/97	-	8.2	11	2.9	9	21.53	7.45	49.8	0.03	101.5	-	358
Carey Bay	3497	DBSS	8/27/97	-	8.2	10	3.9	8.93	21.37	7.43	49.3	0.03	100.4	-	358
Carey Bay	3497	DBSS	8/27/97	-	8.2	9	4.9	8.91	21.26	7.39	49.3	0.03	99.9	-	359
Carey Bay	3497	DBSS	8/27/97	-	8.2	8	6.1	8.89	21.09	7.36	49.3	0.03	99.4	-	360
Carey Bay	3497	DBSS	8/27/97	-	8.2	7	7	8.95	20.91	7.34	49.6	0.03	99.7	-	360
Carey Bay	3497	DBSS	8/27/97	-	8.2	6	8	8.92	20.84	7.28	49.5	0.03	99.2	-	362
Carey Bay	3497	DBSS	8/27/97	-	8.2	5	9	8.84	20.7	7.18	49.1	0.03	98.1	-	365
Carey Bay	3497	DBSS	8/27/97	-	8.2	4	10	8.6	20.42	7.08	48.3	0.03	95	-	370
Carey Bay	3497	DBSS	8/27/97	-	8.2	3	11	8.16	16.21	6.99	40.9	0.03	82.6	-	376
Carey Bay	3497	DBSS	8/27/97	-	8.2	2	11.9	8.02	15.24	7.04	40.2	0.03	79.5	-	374
Carey Bay	3497	DBSS	8/27/97	-	8.2	1	12.9	8.03	14.64	7.15	40.2	0.03	78.6	-	372
Carey Bay	3797	ASRP	9/17/97	-	3.5	13	0.5	8.05	14.69	6.76	44.3	0.03	80.1	-	408
Carey Bay	3797	ASRP	9/17/97	-	3.5	12	1.5	7.89	14.03	6.72	43.7	0.03	77.4	-	411
Carey Bay	3797	ASRP	9/17/97	-	3.5	11	2.5	7.64	11.22	6.71	42.5	0.03	70.3	-	413
Carey Bay	3797	ASRP	9/17/97	-	3.5	10	3.5	7.84	9.99	6.71	42.4	0.03	70.1	-	414
Carey Bay	3797	ASRP	9/17/97	-	3.5	9	4.6	8.21	9.33	6.7	42.9	0.03	72.1	-	415
Carey Bay	3797	ASRP	9/17/97	-	3.5	8	5.5	8.13	9.17	6.71	42.9	0.03	71.1	-	415
Carey Bay	3797	ASRP	9/17/97	-	3.5	7	6.5	8.2	9.1	6.72	43.1	0.03	71.8	-	415
Carey Bay	3797	ASRP	9/17/97	-	3.5	6	7.5	8.27	8.99	6.73	43.2	0.03	72.2	-	414
Carey Bay	3797	ASRP	9/17/97	-	3.5	5	8.5	8.31	8.89	6.75	43.3	0.03	72.3	-	414
Carey Bay	3797	ASRP	9/17/97	-	3.5	4	9.3	8.34	8.78	6.75	43.3	0.03	72.3	-	414
Carey Bay	3797	ASRP	9/17/97	-	3.5	3	10.7	8.67	8.6	6.77	43.5	0.03	75.2	-	413
Carey Bay	3797	ASRP	9/17/97	-	3.5	2	11.5	8.4	8.6	6.78	43.3	0.03	72.7	-	413
Carey Bay	3797	ASRP	9/17/97	-	3.5	1	12.5	8.46	8.48	6.82	43.4	0.03	73.3	-	412
Carey Bay	3997	ASRA	9/29/97	-	6.3	13	0.2	9.16	16.28	7.09	50	0.03	94.3	-	411
Carey Bay	3997	ASRA	9/29/97	-	6.3	12	1	9.09	15.89	7.08	49.9	0.03	92.9	-	411
Carey Bay	3997	ASRA	9/29/97	-	6.3	11	2	9.02	15.58	7.07	49.9	0.03	91.6	-	411
Carey Bay	3997	ASRA	9/29/97	-	6.3	10	3	8.95	15.44	7.04	50	0.03	90.6	-	412
Carey Bay	3997	ASRA	9/29/97	-	6.3	9	4	8.83	15.34	6.99	49.9	0.03	89.2	-	413

Carey Bay	3997	ASRA	9/29/97	-	6.3	8	5	8.59	15.11	6.92	49.4	0.03	86.3	-	415
Carey Bay	3997	ASRA	9/29/97	-	6.3	7	6	7.93	14.51	6.8	47.5	0.03	78.7	-	419
Carey Bay	3997	ASRA	9/29/97	-	6.3	6	7	7.68	12.41	6.77	44.2	0.03	72.7	-	421
Carey Bay	3997	ASRA	9/29/97	-	6.3	5	8	7.63	12.32	6.77	44.2	0.03	72.1	-	421
Carey Bay	3997	ASRA	9/29/97	-	6.3	4	9	7.56	12.14	6.77	43.9	0.03	71.1	-	420
Carey Bay	3997	ASRA	9/29/97	-	6.3	3	10	7.3	10.38	6.75	42.4	0.03	65.9	-	421
Carey Bay	3997	ASRA	9/29/97	-	6.3	2	11	7.79	8.86	6.84	42.2	0.03	67.8	-	419
Carey Bay	3997	ASRA	9/29/97	-	6.3	1	12	8.33	8.37	6.93	42.3	0.03	71.6	-	416
Carey Bay	4297	DBAS	10/22/97	-	4.5	10	0.3	10.25	11.54	7.25	49	0.03	93.6	-	401
Carey Bay	4297	DBAS	10/22/97	-	4.5	9	1.7	10.24	11.56	7.23	49.1	0.03	93.6	-	402
Carey Bay	4297	DBAS	10/22/97	-	4.5	8	2.7	10.24	11.54	7.24	49.2	0.03	93.5	-	401
Carey Bay	4297	DBAS	10/22/97	-	4.5	7	3.7	10.21	11.54	7.21	49.2	0.03	93.2	-	403
Carey Bay	4297	DBAS	10/22/97	-	4.5	6	4.7	10.18	11.54	7.23	49.1	0.03	93	-	402
Carey Bay	4297	DBAS	10/22/97	-	4.5	5	5.7	10.19	11.53	7.22	49.2	0.03	93	-	402
Carey Bay	4297	DBAS	10/22/97	-	4.5	4	6.7	10.19	11.53	7.22	49.3	0.03	93	-	402
Carey Bay	4297	DBAS	10/22/97	-	4.5	3	7.7	10.19	11.53	7.22	49.3	0.03	93	-	402
Carey Bay	4297	DBAS	10/22/97	-	4.5	2	8.7	10.1	11.53	7.21	49.3	0.03	92.2	-	403
Carey Bay	4297	DBAS	10/22/97	-	4.5	1	9.7	10.05	11.51	7.19	49.2	0.03	91.7	-	404
Carey Bay	4497	DBAS	11/4/97	-	3.8	13	0.4	10.06	9.87	7.07	53.3	0.03	88	56	389
Carey Bay	4497	DBAS	11/4/97	-	3.8	12	1.5	10.34	9.55	7.09	53.1	0.03	89.8	215	390
Carey Bay	4497	DBAS	11/4/97	-	3.8	11	2.5	10.46	9.5	7.12	52.9	0.03	90.7	54	390
Carey Bay	4497	DBAS	11/4/97	-	3.8	10	3.5	10.5	9.53	7.11	53	0.03	91.1	41	390
Carey Bay	4497	DBAS	11/4/97	-	3.8	9	4.5	10.5	9.45	7.12	52.9	0.03	90.9	56	389
Carey Bay	4497	DBAS	11/4/97	-	3.8	8	5.5	10.45	9.4	7.11	53	0.03	90.4	113	389
Carey Bay	4497	DBAS	11/4/97	-	3.8	7	6.5	10.28	9.33	7.06	53	0.03	88.8	103	390
Carey Bay	4497	DBAS	11/4/97	-	3.8	6	7.5	10.14	9.22	7.01	52.9	0.03	87.3	210	392
Carey Bay	4497	DBAS	11/4/97	-	3.8	5	8.5	9.65	8.89	6.93	53.1	0.03	82.5	101	393
Carey Bay	4497	DBAS	11/4/97	-	3.8	4	9.5	9.51	8.81	6.89	52.9	0.03	81.1	54	394
Carey Bay	4497	DBAS	11/4/97	-	3.8	3	10.6	9.08	8.58	6.86	52.4	0.03	77	37	395

Carey Bay	4497	DBAS	11/4/97	-	3.8	2	11.5	8.98	8.47	6.87	52.1	0.03	76	111	394

Location	Phase	Sampler	Date	Time	Secchi	Sequence	Depth (m)	Dissolved Oxygen (mg/l)	Temperature (C)	pH	Conductivity (µs/cm)	TDS	Percent Saturation	Statime	Redox
Conkling Point	1597	ASSS	4/18/97	-	1.1	13	0.4	12.35	6.31	7.45	36.4	0.02	99.9	-	372
Conkling Point	1597	ASSS	4/18/97	-	1.1	12	1.9	12.27	6.23	7.43	36.4	0.02	99.2	-	373
Conkling Point	1597	ASSS	4/18/97	-	1.1	11	3.2	12.29	6.2	7.43	36.6	0.02	99.2	-	373
Conkling Point	1597	ASSS	4/18/97	-	1.1	10	4.5	12.27	6.13	7.43	36.7	0.02	98.7	-	373
Conkling Point	1597	ASSS	4/18/97	-	1.1	9	5.7	12.23	6.05	7.42	37	0.02	98.4	-	373
Conkling Point	1597	ASSS	4/18/97	-	1.1	8	7	12.26	5.97	7.41	37.4	0.02	98.4	-	374
Conkling Point	1597	ASSS	4/18/97	-	1.1	7	8.2	12.24	5.97	7.4	37.3	0.02	98.2	-	373
Conkling Point	1597	ASSS	4/18/97	-	1.1	6	9.4	12.26	5.9	7.4	37.6	0.02	98.2	-	373
Conkling Point	1597	ASSS	4/18/97	-	1.1	5	10.4	12.24	5.82	7.39	37.8	0.02	97.9	-	374
Conkling Point	1597	ASSS	4/18/97	-	1.1	4	11.8	12.21	5.62	7.38	38.2	0.02	97.1	-	374
Conkling Point	1597	ASSS	4/18/97	-	1.1	3	13.1	12.2	5.57	7.37	38.3	0.02	96.9	-	374
Conkling Point	1597	ASSS	4/18/97	-	1.1	2	14.4	12.14	5.51	7.36	38.2	0.02	96.3	-	374
Conkling Point	1597	ASSS	4/18/97	-	1.1	1	15.9	12.16	5.29	7.36	38.5	0.02	95.9	-	374
Conkling Point	1997	DBAC	5/16/97	-	0.8	12	0.2	10.99	11.35	6.99	28	0.02	99.6	-	367
Conkling Point	1997	DBAC	5/16/97	-	0.8	11	2.1	11.1	9.61	6.98	27.8	0.02	96.7	-	369
Conkling Point	1997	DBAC	5/16/97	-	0.8	10	3.9	11.09	9.46	7	27.8	0.02	96.2	-	368
Conkling Point	1997	DBAC	5/16/97	-	0.8	9	5.5	11.08	9.42	6.98	27.7	0.02	96	-	369
Conkling Point	1997	DBAC	5/16/97	-	0.8	8	7	11.05	9.35	6.97	27.9	0.02	95.6	-	369
Conkling Point	1997	DBAC	5/16/97	-	0.8	7	8.6	11.04	9.28	6.98	28.2	0.02	95.3	-	368
Conkling Point	1997	DBAC	5/16/97	-	0.8	6	10.1	11.03	9.28	6.97	28.2	0.02	95.3	-	368
Conkling Point	1997	DBAC	5/16/97	-	0.8	5	11.6	11.01	9.15	6.97	28.6	0.02	94.7	-	368
Conkling Point	1997	DBAC	5/16/97	-	0.8	4	13	11.03	8.35	6.95	31.4	0.02	93.1	-	369
Conkling Point	1997	DBAC	5/16/97	-	0.8	3	14.5	11.15	7.45	6.93	34.8	0.02	92.1	-	369
Conkling Point	1997	DBAC	5/16/97	-	0.8	2	16	10.71	6.08	6.89	41	0.03	85.6	-	372
Conkling Point	1997	DBAC	5/16/97	-	0.8	1	17.5	10.51	5.9	6.89	44.8	0.03	83.4	-	370
Conkling Point	2197	DBSS	5/29/97	-	1.8	12	0.2	11.09	11.41	7.01	26.9	0.02	101	-	362

Conkling Point	2197	DBSS	5/29/97	-	1.8	11	1.4	11.11	10.79	7.02	26.9	0.02	99.7	-	363
Conkling Point	2197	DBSS	5/29/97	-	1.8	10	2.9	11.16	10.36	7	26.8	0.02	99	-	364
Conkling Point	2197	DBSS	5/29/97	-	1.8	9	4.5	11.12	10.22	6.98	26.8	0.02	98.4	-	365
Conkling Point	2197	DBSS	5/29/97	-	1.8	8	6	11.12	10.05	6.96	26.9	0.02	98	-	365
Conkling Point	2197	DBSS	5/29/97	-	1.8	7	7.4	11.05	9.74	6.94	26.8	0.02	96.6	-	364
Conkling Point	2197	DBSS	5/29/97	-	1.8	6	8.9	11.01	9.61	6.93	26.9	0.02	96	-	364
Conkling Point	2197	DBSS	5/29/97	-	1.8	5	10.4	10.97	9.43	6.92	26.9	0.02	95.3	-	363
Conkling Point	2197	DBSS	5/29/97	-	1.8	4	12.1	10.89	8.96	6.91	27.2	0.02	93.5	-	362
Conkling Point	2197	DBSS	5/29/97	-	1.8	3	13.4	10.75	8.71	6.9	27.8	0.02	91.8	-	362
Conkling Point	2197	DBSS	5/29/97	-	1.8	2	15	10.75	7.97	6.88	31.3	0.02	90.1	-	361
Conkling Point	2197	DBSS	5/29/97	-	1.8	1	16.8	10.29	7.01	6.86	36	0.02	84.3	-	360
Conkling Point	2397	DBAS	6/11/97	-	2	12	0.2	10.9	15.61	7.09	30.8	0.02	109.4	-	395
Conkling Point	2397	DBAS	6/11/97	-	2	11	1	10.7	14.08	7.08	30.1	0.02	103.8	-	396
Conkling Point	2397	DBAS	6/11/97	-	2	10	2.5	10.95	12.4	7.06	29.4	0.02	102.2	-	398
Conkling Point	2397	DBAS	6/11/97	-	2	9	4	10.98	11.91	7.04	29.1	0.02	101.5	-	398
Conkling Point	2397	DBAS	6/11/97	-	2	8	5.3	10.87	11.77	6.99	29.2	0.02	100.1	-	399
Conkling Point	2397	DBAS	6/11/97	-	2	7	6.9	10.85	10.68	6.99	29.6	0.02	97.3	-	400
Conkling Point	2397	DBAS	6/11/97	-	2	6	8.3	10.82	9.94	6.98	29.1	0.02	95.5	-	399
Conkling Point	2397	DBAS	6/11/97	-	2	5	9.9	10.78	9.78	6.97	28.9	0.02	94.7	-	399
Conkling Point	2397	DBAS	6/11/97	-	2	4	11.4	10.73	9.33	6.96	29.8	0.02	93.3	-	398
Conkling Point	2397	DBAS	6/11/97	-	2	3	13	10.53	8.72	6.94	32.2	0.02	90.2	-	398
Conkling Point	2397	DBAS	6/11/97	-	2	2	14.5	10.48	8.47	6.93	33.3	0.02	89.3	-	398
Conkling Point	2397	DBAS	6/11/97	-	2	1	16.2	10.17	7.86	6.93	37.1	0.02	85.3	-	395
Conkling Point	2597	DBSS	6/26/97	-	2.5	16	0.4	10.79	15.18	7.23	30.6	0.02	107.1	-	421
Conkling Point	2597	DBSS	6/26/97	-	2.5	15	1	10.79	15.14	7.23	30.6	0.02	107.1	-	422
Conkling Point	2597	DBSS	6/26/97	-	2.5	14	2.2	10.8	14.94	7.21	30.7	0.02	106.7	-	424
Conkling Point	2597	DBSS	6/26/97	-	2.5	13	3.3	10.82	14.66	7.15	31	0.02	106.2	-	426
Conkling Point	2597	DBSS	6/26/97	-	2.5	12	4.2	10.75	14.46	7.11	30.9	0.02	105	-	427
Conkling Point	2597	DBSS	6/26/97	-	2.5	11	5.2	10.87	13.07	7.06	31.2	0.02	103	-	430

Conkling Point	2597	DBSS	6/26/97	-	2.5	10	6.2	10.75	12.66	7.02	30.8	0.02	101	-	431
Conkling Point	2597	DBSS	6/26/97	-	2.5	9	7.2	10.78	12.17	7	30.6	0.02	100.1	-	431
Conkling Point	2597	DBSS	6/26/97	-	2.5	8	8.2	10.73	12	6.95	30.8	0.02	99.3	-	431
Conkling Point	2597	DBSS	6/26/97	-	2.5	7	9.3	10.02	10.77	6.9	29.5	0.02	90	-	434
Conkling Point	2597	DBSS	6/26/97	-	2.5	6	10.2	10.21	9.2	6.83	31.2	0.02	88.4	-	435
Conkling Point	2597	DBSS	6/26/97	-	2.5	5	11.3	9.97	8.66	6.8	32.7	0.02	85.2	-	435
Conkling Point	2597	DBSS	6/26/97	-	2.5	4	12.4	9.36	8.27	6.78	35.8	0.02	79.3	-	436
Conkling Point	2597	DBSS	6/26/97	-	2.5	3	13.3	9.52	7.91	6.8	37.2	0.02	79.9	-	434
Conkling Point	2597	DBSS	6/26/97	-	2.5	2	14.4	9.05	7.56	6.8	38.9	0.02	75.3	-	434
Conkling Point	2597	DBSS	6/26/97	-	2.5	1	15.3	8.74	7.43	6.82	40.2	0.03	72.5	-	433
Conkling Point	2797	DBSS	7/8/97	-	2.8	16	0.3	10.17	18.54	7.16	36.5	0.02	*****	-	434
Conkling Point	2797	DBSS	7/8/97	-	2.8	15	1.1	10.15	18	7.13	35.6	0.02	*****	-	436
Conkling Point	2797	DBSS	7/8/97	-	2.8	14	2	10.31	17.25	7.11	36.3	0.02	*****	-	437
Conkling Point	2797	DBSS	7/8/97	-	2.8	13	3	10.36	16.56	7.09	36.9	0.02	*****	-	438
Conkling Point	2797	DBSS	7/8/97	-	2.8	12	3.9	10.45	16.12	7.06	36.7	0.02	*****	-	439
Conkling Point	2797	DBSS	7/8/97	-	2.8	11	5	10.41	15.54	7.02	36.3	0.02	*****	-	440
Conkling Point	2797	DBSS	7/8/97	-	2.8	10	6	10.41	14.52	7	35.3	0.02	*****	-	441
Conkling Point	2797	DBSS	7/8/97	-	2.8	9	7.1	10.1	13.28	6.92	33.6	0.02	95.9	-	444
Conkling Point	2797	DBSS	7/8/97	-	2.8	8	8	10.03	12.71	6.89	33.8	0.02	93.9	-	445
Conkling Point	2797	DBSS	7/8/97	-	2.8	7	9	9.76	12.11	6.87	33.3	0.02	90.2	-	446
Conkling Point	2797	DBSS	7/8/97	-	2.8	6	10	9.26	11.34	6.84	33.2	0.02	84	-	447
Conkling Point	2797	DBSS	7/8/97	-	2.8	5	11	8.94	10.69	6.84	33.3	0.02	79.9	-	447
Conkling Point	2797	DBSS	7/8/97	-	2.8	4	11.9	8.68	9.59	6.84	35	0.02	75.5	-	448
Conkling Point	2797	DBSS	7/8/97	-	2.8	3	12.8	8.73	8.72	6.86	36.7	0.02	74.5	-	447
Conkling Point	2797	DBSS	7/8/97	-	2.8	2	13.9	8.74	8.45	6.88	37.7	0.02	73.9	-	448
Conkling Point	2797	DBSS	7/8/97	-	2.8	1	14.9	8.73	8.22	6.92	38.6	0.02	73.6	-	446
Conkling Point	2997	SSJD	7/24/97	-	4.5	10	0.4	9.56	21.37	7.46	39.7	0.03	*****	-	408
Conkling Point	2997	SSJD	7/24/97	-	4.5	9	2	9.59	20.79	7.37	37.6	0.02	*****	-	411
Conkling Point	2997	SSJD	7/24/97	-	4.5	8	3.5	10.4	18.18	7.26	38.4	0.02	*****	-	417

Conkling Point	2997	SSJD	7/24/97	-	4.5	7	5	10.43	17.3	7.13	38	0.02	*****	-	420
Conkling Point	2997	SSJD	7/24/97	-	4.5	6	6.5	10	16.31	7.05	35.9	0.02	*****	-	422
Conkling Point	2997	SSJD	7/24/97	-	4.5	5	8	10.02	15.41	6.93	34.8	0.02	99.8	-	427
Conkling Point	2997	SSJD	7/24/97	-	4.5	4	9.5	9.46	12.97	6.83	32.6	0.02	89.2	-	431
Conkling Point	2997	SSJD	7/24/97	-	4.5	3	11	9.31	12.3	6.77	32	0.02	86.4	-	433
Conkling Point	2997	SSJD	7/24/97	-	4.5	2	12.5	8.63	9.87	6.74	33.2	0.02	75.8	-	435
Conkling Point	2997	SSJD	7/24/97	-	4.5	1	14	8.17	8.72	6.74	36.4	0.02	69.7	-	435
Conkling Point	3197	DBSS	8/5/97	-	4.1	15	0.3	9.57	24	8.18	41.5	0.03	112.2	-	329
Conkling Point	3197	DBSS	8/5/97	-	4.1	14	1.8	9.56	22.25	7.5	43.2	0.03	108.4	-	350
Conkling Point	3197	DBSS	8/5/97	-	4.1	13	2.7	9.49	22.04	7.46	42.3	0.03	107.2	-	350
Conkling Point	3197	DBSS	8/5/97	-	4.1	12	3.6	9.48	21.7	7.39	41.4	0.03	106.4	-	352
Conkling Point	3197	DBSS	8/5/97	-	4.1	11	4.7	9.88	21.04	7.33	43.5	0.03	109.5	-	352
Conkling Point	3197	DBSS	8/5/97	-	4.1	10	5.6	9.4	20.23	7.19	40.7	0.03	102.5	-	356
Conkling Point	3197	DBSS	8/5/97	-	4.1	9	6.7	9.32	19.21	7.13	39.5	0.03	99.6	-	356
Conkling Point	3197	DBSS	8/5/97	-	4.1	8	7.7	9.69	18.15	7.13	37.4	0.02	101.4	-	354
Conkling Point	3197	DBSS	8/5/97	-	4.1	7	8.7	10.04	17.18	7.09	36.3	0.02	103	-	353
Conkling Point	3197	DBSS	8/5/97	-	4.1	6	9.7	9.28	15.82	6.99	35.4	0.02	92.4	-	354
Conkling Point	3197	DBSS	8/5/97	-	4.1	5	10.7	8.73	14.39	6.93	34.7	0.02	84.3	-	354
Conkling Point	3197	DBSS	8/5/97	-	4.1	4	11.8	8.22	12.28	6.91	33.7	0.02	75.9	-	350
Conkling Point	3197	DBSS	8/5/97	-	4.1	3	12.6	8.21	11.23	6.93	34.5	0.02	73.8	-	346
Conkling Point	3197	DBSS	8/5/97	-	4.1	2	13.7	8	10.16	6.95	35.9	0.02	70.2	-	342
Conkling Point	3197	DBSS	8/5/97	-	4.1	1	14.8	7.22	9.44	7.02	38.4	0.02	62.2	-	388
Conkling Point	3297	DBSS	8/14/97	-	5	11	0.3	8.64	22.75	7.98	44.7	0.03	99.5	-	368
Conkling Point	3297	DBSS	8/14/97	-	5	10	2.1	8.73	22.56	8.11	44.7	0.03	100.3	-	361
Conkling Point	3297	DBSS	8/14/97	-	5	9	3.6	8.81	22.33	7.87	44.3	0.03	100.7	-	363
Conkling Point	3297	DBSS	8/14/97	-	5	8	5	8.57	21.86	7.31	45.2	0.03	97.1	-	384
Conkling Point	3297	DBSS	8/14/97	-	5	7	6.5	8.56	21.26	7.14	46.4	0.03	95.9	-	389
Conkling Point	3297	DBSS	8/14/97	-	5	6	8	8.56	20.65	7.06	43.6	0.03	94.7	-	391
Conkling Point	3297	DBSS	8/14/97	-	5	5	9.6	8.58	18.75	6.94	39	0.03	91.4	-	396

Conkling Point	3297	DBSS	8/14/97	-	5	4	11	7.69	15.02	6.9	35.7	0.02	75.8	-	399
Conkling Point	3297	DBSS	8/14/97	-	5	3	12.6	6.19	15.07	6.87	36.5	0.02	77	-	399
Conkling Point	3297	DBSS	8/14/97	-	5	2	14	6.57	9.2	6.95	39.1	0.03	56.7	-	401
Conkling Point	3297	DBSS	8/14/97	-	5	1	15.6	6.79	8.9	7.08	39.3	0.03	58.2	-	398
Conkling Point	3497	DBSS	8/27/97	-	7.2	11	0.4	9.02	21.92	7.53	50	0.03	102.3	-	346
Conkling Point	3497	DBSS	8/27/97	-	7.2	10	2	9.03	21.7	7.51	50	0.03	102.1	-	346
Conkling Point	3497	DBSS	8/27/97	-	7.2	9	3.6	9	21.56	7.45	50	0.03	101.6	-	347
Conkling Point	3497	DBSS	8/27/97	-	7.2	8	5	9.01	21.44	7.4	50.3	0.03	101.4	-	349
Conkling Point	3497	DBSS	8/27/97	-	7.2	7	6.6	8.84	21.14	7.33	49.2	0.03	98.9	-	350
Conkling Point	3497	DBSS	8/27/97	-	7.2	6	8	8.73	21	7.17	49.5	0.03	97.4	-	355
Conkling Point	3497	DBSS	8/27/97	-	7.2	5	9.5	8.19	20.49	6.96	49.5	0.03	90.5	-	363
Conkling Point	3497	DBSS	8/27/97	-	7.2	4	11	7.84	17.3	6.89	42.7	0.03	81.2	-	368
Conkling Point	3497	DBSS	8/27/97	-	7.2	3	12.6	8.37	15.61	6.88	40.2	0.03	83.6	-	368
Conkling Point	3497	DBSS	8/27/97	-	7.2	2	14.1	7.65	12.49	6.86	39.9	0.03	71.3	-	369
Conkling Point	3497	DBSS	8/27/97	-	7.2	1	15.8	6.43	9.48	6.87	42.8	0.03	56	-	369
Conkling Point	3797	ASRP	9/17/97	-	3	16	0.2	8.46	14.83	6.87	47.6	0.03	84.4	-	392
Conkling Point	3797	ASRP	9/17/97	-	3	15	1	8.42	14.86	6.86	47.6	0.03	84.1	-	392
Conkling Point	3797	ASRP	9/17/97	-	3	14	2	8.3	14.58	6.79	46.9	0.03	82.4	-	395
Conkling Point	3797	ASRP	9/17/97	-	3	13	3	7.76	13.75	6.68	45.7	0.03	76.9	-	399
Conkling Point	3797	ASRP	9/17/97	-	3	12	4	7.6	10.69	6.62	42.6	0.03	69.1	-	404
Conkling Point	3797	ASRP	9/17/97	-	3	11	5	7.76	9.81	6.62	42.7	0.03	69.1	-	404
Conkling Point	3797	ASRP	9/17/97	-	3	10	6	7.91	9.5	6.63	42.7	0.03	69.9	-	403
Conkling Point	3797	ASRP	9/17/97	-	3	9	7	7.78	9.43	6.63	43.1	0.03	68.6	-	402
Conkling Point	3797	ASRP	9/17/97	-	3	8	8	7.61	9.37	6.63	42.9	0.03	67.2	-	402
Conkling Point	3797	ASRP	9/17/97	-	3	7	9	7.5	9.06	6.62	43	0.03	65.7	-	401
Conkling Point	3797	ASRP	9/17/97	-	3	6	10	7.18	8.74	6.63	43.3	0.03	62.5	-	400
Conkling Point	3797	ASRP	9/17/97	-	3	5	11	7.35	8.68	6.66	43.4	0.03	63.7	-	398
Conkling Point	3797	ASRP	9/17/97	-	3	4	12	8.42	8.29	6.71	43.8	0.03	72.1	-	395
Conkling Point	3797	ASRP	9/17/97	-	3	3	13	8.59	8.2	6.74	43.8	0.03	74.2	-	392

Conkling Point	3797	ASRP	9/17/97	-	3	2	14.1	8.63	8.19	6.76	43.8	0.03	73.9	-	391
Conkling Point	3797	ASRP	9/17/97	-	3	1	15.2	8.7	8.19	6.79	43.8	0.03	74.5	-	389
Conkling Point	3997	ASRA	9/29/97	-	6.2	10	0.2	9.53	16.26	7.21	50.8	0.03	98.2	-	388
Conkling Point	3997	ASRA	9/29/97	-	6.2	9	1.5	9.3	15.79	7.13	50.3	0.03	94.8	-	391
Conkling Point	3997	ASRA	9/29/97	-	6.2	8	3	9.24	15.61	7.06	50.2	0.03	93.9	-	392
Conkling Point	3997	ASRA	9/29/97	-	6.2	7	4.5	8.78	14.69	6.94	48.9	0.03	87.4	-	395
Conkling Point	3997	ASRA	9/29/97	-	6.2	6	6	8.32	13.67	6.83	47.1	0.03	81	-	397
Conkling Point	3997	ASRA	9/29/97	-	6.2	5	7.5	7.78	12.38	6.77	44.3	0.03	73.6	-	399
Conkling Point	3997	ASRA	9/29/97	-	6.2	4	9	7.84	10.9	6.76	44	0.03	71.7	-	398
Conkling Point	3997	ASRA	9/29/97	-	6.2	3	10.5	7.38	9.64	6.77	42.2	0.03	65.1	-	397
Conkling Point	3997	ASRA	9/29/97	-	6.2	2	12	7.86	8.4	6.82	42.3	0.03	67.6	-	395
Conkling Point	3997	ASRA	9/29/97	-	6.2	1	13.4	8.18	8.22	6.92	42.4	0.03	70.1	-	389
Conkling Point	4297	DBAS	10/22/97	-	4.1	16	0.2	10.3	11.54	7.28	48	0.03	94	-	378
Conkling Point	4297	DBAS	10/22/97	-	4.1	15	1	10.28	11.56	7.31	49	0.03	93.9	-	376
Conkling Point	4297	DBAS	10/22/97	-	4.1	14	2	10.27	11.57	7.29	49.1	0.03	93.8	-	377
Conkling Point	4297	DBAS	10/22/97	-	4.1	13	3	10.26	11.54	7.31	49.2	0.03	93.7	-	376
Conkling Point	4297	DBAS	10/22/97	-	4.1	12	4	10.28	11.54	7.29	49.3	0.03	93.8	-	376
Conkling Point	4297	DBAS	10/22/97	-	4.1	11	5	10.25	11.54	7.29	49.1	0.03	93.6	-	376
Conkling Point	4297	DBAS	10/22/97	-	4.1	10	6	10.28	11.54	7.29	49.2	0.03	93.8	-	376
Conkling Point	4297	DBAS	10/22/97	-	4.1	9	7	10.26	11.54	7.28	49.3	0.03	93.7	-	376
Conkling Point	4297	DBAS	10/22/97	-	4.1	8	8	10.25	11.54	7.29	49.3	0.03	93.6	-	375
Conkling Point	4297	DBAS	10/22/97	-	4.1	7	9	10.23	11.53	7.27	49.1	0.03	93.4	-	375
Conkling Point	4297	DBAS	10/22/97	-	4.1	6	10	10.24	11.53	7.27	49.1	0.03	93.5	-	375
Conkling Point	4297	DBAS	10/22/97	-	4.1	5	11	10.25	11.51	7.31	49.3	0.03	93.5	-	372
Conkling Point	4297	DBAS	10/22/97	-	4.1	4	12	10.26	11.5	7.3	49.3	0.03	93.4	-	372
Conkling Point	4297	DBAS	10/22/97	-	4.1	3	13	10.25	11.43	7.3	49.3	0.03	93.4	-	372
Conkling Point	4297	DBAS	10/22/97	-	4.1	2	14	10.63	11.15	7.31	49.5	0.03	96.2	-	371
Conkling Point	4297	DBAS	10/22/97	-	4.1	1	14.9	10.61	10.86	7.32	50	0.03	95.3	-	370

Conkling Point	4497	DBAS	11/3/97	-	3.1	11	0.3	10.59	7.04	9.79	53	0.03	93.2	*****	441
Conkling Point	4497	DBAS	11/3/97	-	3.1	10	1.5	10.54	7.05	9.74	53	0.03	92.5	*****	441
Conkling Point	4497	DBAS	11/3/97	-	3.1	9	3	10.52	7.02	9.6	53.1	0.03	92	*****	442
Conkling Point	4497	DBAS	11/3/97	-	3.1	8	4.5	10.75	6.99	9.24	52.9	0.03	93.3	*****	441
Conkling Point	4497	DBAS	11/3/97	-	3.1	7	6	10.97	6.93	8.74	53.7	0.03	94	*****	440
Conkling Point	4497	DBAS	11/3/97	-	3.1	6	7.5	9.25	6.79	8.48	52.9	0.03	78.8	*****	442
Conkling Point	4497	DBAS	11/3/97	-	3.1	5	9	9.27	6.77	8.48	52.8	0.03	78.9	*****	441
Conkling Point	4497	DBAS	11/3/97	-	3.1	4	10.5	9.32	6.75	8.43	52.5	0.03	79.3	*****	439
Conkling Point	4497	DBAS	11/3/97	-	3.1	3	12	8.81	6.66	7.73	48.8	0.03	73.7	*****	441
Conkling Point	4497	DBAS	11/3/97	-	3.1	2	13.6	8.64	6.66	7.41	47	0.03	71.6	*****	439
Conkling Point	4497	DBAS	11/3/97	-	3.1	1	14.9	8.65	6.71	7.37	46.7	0.03	71.7	*****	441

Location	Phase	Sampler	Date	Time	Secchi	Sequence	Depth (m)	Dissolved Oxygen (mg/l)	Temperature (C)	pH	Conductivity (µs/cm)	TDS	Percent Saturation	Statime	Redox
Hidden Lake	1597	ASSS	4/18/97	-	1.9	5	0.2	12.49	6.73	7.46	38.6	0.02	*****	-	374
Hidden Lake	1597	ASSS	4/18/97	-	1.9	4	2.3	12.51	6.31	7.45	38.4	0.02	*****	-	375
Hidden Lake	1597	ASSS	4/18/97	-	1.9	3	3.7	12.54	6.28	7.45	38.4	0.02	*****	-	375
Hidden Lake	1597	ASSS	4/18/97	-	1.9	2	5.3	12.47	6.26	7.43	38.5	0.02	*****	-	375
Hidden Lake	1597	ASSS	4/18/97	-	1.9	1	6.9	12.38	6.23	7.42	38.3	0.02	99.9	-	375
Hidden Lake	1997	DBAC	5/16/97	-	0.7	11	0.2	11.1	11.97	7	29.9	0.02	102.2	-	371
Hidden Lake	1997	DBAC	5/16/97	-	0.7	10	1.4	11	10.64	6.97	28.7	0.02	98.1	-	376
Hidden Lake	1997	DBAC	5/16/97	-	0.7	9	2.4	11.06	9.38	6.97	28.8	0.02	95.8	-	377
Hidden Lake	1997	DBAC	5/16/97	-	0.7	8	3.4	11.03	9.3	6.97	29	0.02	95.3	-	377
Hidden Lake	1997	DBAC	5/16/97	-	0.7	7	4.5	11.03	9.27	6.96	29.3	0.02	95.3	-	377
Hidden Lake	1997	DBAC	5/16/97	-	0.7	6	5.4	11.01	9.25	6.98	29.4	0.02	95	-	375
Hidden Lake	1997	DBAC	5/16/97	-	0.7	5	6.4	10.95	9.17	6.96	30.2	0.02	94.4	-	376
Hidden Lake	1997	DBAC	5/16/97	-	0.7	4	7.5	10.89	9.1	6.98	29.1	0.02	93.6	-	375
Hidden Lake	1997	DBAC	5/16/97	-	0.7	3	8.5	10.87	9.07	6.98	28.8	0.02	93.4	-	374
Hidden Lake	1997	DBAC	5/16/97	-	0.7	2	9.3	10.86	9.04	6.99	28.9	0.02	93.3	-	373

Hidden Lake	1997	DBAC	5/16/97	-	0.7	1	10.4	10.86	8.97	6.99	30	0.02	93.1	-	373
Hidden Lake	2197	DBSS	5/29/97	-	1.7	10	0.7	10.91	12.61	6.99	26.6	0.02	101.9	-	361
Hidden Lake	2197	DBSS	5/29/97	-	1.7	9	1.8	11.25	9.84	7	26.9	0.02	98.6	-	361
Hidden Lake	2197	DBSS	5/29/97	-	1.7	8	2.8	11.18	9.53	6.99	26.7	0.02	97.3	-	361
Hidden Lake	2197	DBSS	5/29/97	-	1.7	7	3.7	11.14	9.3	6.97	26.6	0.02	96.5	-	362
Hidden Lake	2197	DBSS	5/29/97	-	1.7	6	4.7	11.13	9.19	6.95	26.6	0.02	96.1	-	362
Hidden Lake	2197	DBSS	5/29/97	-	1.7	5	5.7	11.03	9.12	6.95	26.4	0.02	95.3	-	361
Hidden Lake	2197	DBSS	5/29/97	-	1.7	4	6.8	10.74	8.45	6.92	26.4	0.02	91.1	-	361
Hidden Lake	2197	DBSS	5/29/97	-	1.7	3	7.7	10.76	8.38	6.92	26.3	0.02	91.1	-	360
Hidden Lake	2197	DBSS	5/29/97	-	1.7	2	8.8	10.62	8.33	6.91	26.5	0.02	89.8	-	359
Hidden Lake	2197	DBSS	5/29/97	-	1.7	1	9.8	10	8.3	6.91	27	0.02	84.5	-	367
Hidden Lake	2397	DBAS	6/11/97	-	2	10	0.5	11.03	13.17	7.09	29.3	0.02	104.9	-	405
Hidden Lake	2397	DBAS	6/11/97	-	2	9	1.6	11.24	12.28	7.11	29.1	0.02	104.7	-	405
Hidden Lake	2397	DBAS	6/11/97	-	2	8	2.6	11.15	11.98	7.1	29	0.02	103.2	-	405
Hidden Lake	2397	DBAS	6/11/97	-	2	7	3.6	11.13	11.91	7.06	29	0.02	102.9	-	407
Hidden Lake	2397	DBAS	6/11/97	-	2	6	4.3	11.1	10.59	7.02	28.5	0.02	99.5	-	409
Hidden Lake	2397	DBAS	6/11/97	-	2	5	5.3	10.97	10.02	7.01	28.2	0.02	97.1	-	410
Hidden Lake	2397	DBAS	6/11/97	-	2	4	6.3	10.96	9.61	6.99	27.7	0.02	96	-	410
Hidden Lake	2397	DBAS	6/11/97	-	2	3	7.2	10.72	9.35	6.98	27.7	0.02	93.3	-	411
Hidden Lake	2397	DBAS	6/11/97	-	2	2	8.1	10.16	9.13	6.98	28.1	0.02	88	-	411
Hidden Lake	2397	DBAS	6/11/97	-	2	1	8.2	10.15	9.12	6.98	28.1	0.02	87.8	-	411
Hidden Lake	2597	DBSS	6/26/97	-	2.4	11	0.4	10.75	13.72	7.16	30.6	0.02	103.3	-	406
Hidden Lake	2597	DBSS	6/26/97	-	2.4	10	0.3	10.75	13.77	7.15	30.6	0.02	103.5	-	406
Hidden Lake	2597	DBSS	6/26/97	-	2.4	9	1.2	10.78	13.3	7.14	30.4	0.02	102.7	-	409
Hidden Lake	2597	DBSS	6/26/97	-	2.4	8	2.4	10.8	12.94	7.13	30.5	0.02	102	-	409
Hidden Lake	2597	DBSS	6/26/97	-	2.4	7	3.4	10.75	12.74	7.11	30.2	0.02	101	-	410
Hidden Lake	2597	DBSS	6/26/97	-	2.4	6	4.5	10.52	12.44	7.06	30.3	0.02	98.3	-	411
Hidden Lake	2597	DBSS	6/26/97	-	2.4	5	4.5	10.54	12.36	7.02	30.3	0.02	98.3	-	411

Hidden Lake	2597	DBSS	6/26/97	-	2.4	4	5.5	10.38	11.89	6.98	30	0.02	95.8	-	411
Hidden Lake	2597	DBSS	6/26/97	-	2.4	3	6.5	7.98	11.15	6.83	29.8	0.02	72.3	-	416
Hidden Lake	2597	DBSS	6/26/97	-	2.4	2	7.5	6.41	10.43	6.86	30.3	0.02	57.2	-	418
Hidden Lake	2597	DBSS	6/26/97	-	2.4	1	7.4	6.45	10.38	6.88	30.3	0.02	57.4	-	419
Hidden Lake	2797	DBSS	7/8/97	-	2.4	12	0.3	10.08	18.56	7.14	34.7	0.02	*****	-	392
Hidden Lake	2797	DBSS	7/8/97	-	2.4	11	1.4	10.29	16.49	7.1	34.2	0.02	*****	-	395
Hidden Lake	2797	DBSS	7/8/97	-	2.4	10	2.1	10.45	16.29	7.08	34.2	0.02	*****	-	393
Hidden Lake	2797	DBSS	7/8/97	-	2.4	9	2.7	10.27	15.84	7.02	34.1	0.02	*****	-	394
Hidden Lake	2797	DBSS	7/8/97	-	2.4	8	3.4	10.49	15.25	6.98	33.8	0.02	*****	-	394
Hidden Lake	2797	DBSS	7/8/97	-	2.4	7	4.1	10.27	14.49	6.89	33.2	0.02	*****	-	396
Hidden Lake	2797	DBSS	7/8/97	-	2.4	6	4.8	9.94	13.4	6.84	32.4	0.02	94.5	-	396
Hidden Lake	2797	DBSS	7/8/97	-	2.4	5	5.4	9.42	13.18	6.77	32.6	0.02	89.2	-	396
Hidden Lake	2797	DBSS	7/8/97	-	2.4	4	6.1	8.57	12.67	6.72	32.4	0.02	80.2	-	395
Hidden Lake	2797	DBSS	7/8/97	-	2.4	3	6.9	7.84	12.2	6.7	32.5	0.02	72.4	-	392
Hidden Lake	2797	DBSS	7/8/97	-	2.4	2	7.6	6.94	11.93	6.7	32.6	0.02	63.7	-	388
Hidden Lake	2797	DBSS	7/8/97	-	2.4	1	8.3	6.46	11.82	6.82	32.8	0.02	59.3	-	375
Hidden Lake	2997	SSJD	7/24/97	-	3.5	10	0.5	9.66	22.27	7.88	35.2	0.02	*****	-	391
Hidden Lake	2997	SSJD	7/24/97	-	3.5	9	1	9.74	22.11	7.9	35.3	0.02	*****	-	390
Hidden Lake	2997	SSJD	7/24/97	-	3.5	8	1.5	9.8	21.99	7.82	35.2	0.02	*****	-	391
Hidden Lake	2997	SSJD	7/24/97	-	3.5	7	2.5	9.96	21.67	7.59	35.5	0.02	*****	-	395
Hidden Lake	2997	SSJD	7/24/97	-	3.5	6	3.5	10.45	17.59	7.02	32.7	0.02	*****	-	417
Hidden Lake	2997	SSJD	7/24/97	-	3.5	5	4.5	10	16.07	6.88	32	0.02	*****	-	421
Hidden Lake	2997	SSJD	7/24/97	-	3.5	4	5.4	8.64	14.36	6.67	31.6	0.02	84	-	425
Hidden Lake	2997	SSJD	7/24/97	-	3.5	3	6.5	6.29	13.18	6.61	33.2	0.02	59.8	-	427
Hidden Lake	2997	SSJD	7/24/97	-	3.5	2	7.3	5.5	12.9	6.65	33.7	0.02	51.8	-	424
Hidden Lake	2997	SSJD	7/24/97	-	3.5	1	8	4.83	12.77	6.82	34	0.02	45.4	-	432
Hidden Lake	3197	DBSS	8/5/97	-	5.1	10	0.3	10.19	25.4	8.67	38.8	0.02	122.5	-	256
Hidden Lake	3197	DBSS	8/5/97	-	5.1	9	1.5	10	24.66	8.44	38.2	0.02	118.5	-	258

Hidden Lake	3197	DBSS	8/5/97	-	5.1	8	2.5	10	24.16	8.19	38.2	0.02	117.4	-	258
Hidden Lake	3197	DBSS	8/5/97	-	5.1	7	3.5	10.08	21.44	7.21	35.1	0.02	112.5	-	289
Hidden Lake	3197	DBSS	8/5/97	-	5.1	6	4.5	10.33	18.29	7.05	32.4	0.02	108.5	-	293
Hidden Lake	3197	DBSS	8/5/97	-	5.1	5	5.5	8.93	16.04	6.89	32.7	0.02	89.4	-	284
Hidden Lake	3197	DBSS	8/5/97	-	5.1	4	6.6	5.91	14.49	6.83	36.5	0.02	57.1	-	269
Hidden Lake	3197	DBSS	8/5/97	-	5.1	3	7.5	2.2	13.35	6.85	40.1	0.03	20.7	-	237
Hidden Lake	3197	DBSS	8/5/97	-	5.1	2	8.5	0.44	12.85	7.02	52.9	0.03	4.1	-	178
Hidden Lake	3197	DBSS	8/5/97	-	5.1	1	8.5	0.48	12.82	7.09	52.2	0.03	4.5	-	174
Hidden Lake	3297	DBSS	8/14/97	-	6	10	0.3	8.76	23.28	7.95	39.9	0.03	101.9	-	275
Hidden Lake	3297	DBSS	8/14/97	-	6	9	1	8.77	23.22	7.89	39.8	0.03	101.9	-	271
Hidden Lake	3297	DBSS	8/14/97	-	6	8	2	8.82	22.95	7.8	39.9	0.03	102.1	-	269
Hidden Lake	3297	DBSS	8/14/97	-	6	7	3	8.91	22.74	7.54	40.3	0.03	102.6	-	271
Hidden Lake	3297	DBSS	8/14/97	-	6	6	4	8.64	21.72	6.98	38.8	0.02	97.6	-	290
Hidden Lake	3297	DBSS	8/14/97	-	6	5	5	8.67	18.32	6.76	34.5	0.02	91.6	-	296
Hidden Lake	3297	DBSS	8/14/97	-	6	4	6	6.25	16.11	6.67	37.6	0.02	63	-	288
Hidden Lake	3297	DBSS	8/14/97	-	6	3	6.9	2.37	14.47	6.6	41.7	0.03	22.7	-	266
Hidden Lake	3297	DBSS	8/14/97	-	6	2	8	0.46	13.43	6.59	50.7	0.03	4.4	-	242
Hidden Lake	3297	DBSS	8/14/97	-	6	1	8	0.81	13.86	6.92	47.1	0.03	8.1	-	225
Hidden Lake	3497	DBSS	8/27/97	-	5.7	10	0.5	9.39	22.02	7.9	44.9	0.03	106.8	-	235
Hidden Lake	3497	DBSS	8/27/97	-	5.7	9	0.3	9.39	22.02	7.9	44.9	0.03	106.8	-	235
Hidden Lake	3497	DBSS	8/27/97	-	5.7	8	1.6	9.41	21.92	7.88	45	0.03	106.9	-	231
Hidden Lake	3497	DBSS	8/27/97	-	5.7	7	2.4	9.43	21.88	7.83	45	0.03	107	-	223
Hidden Lake	3497	DBSS	8/27/97	-	5.7	6	3.5	9.45	21.85	7.74	45.1	0.03	107.2	-	219
Hidden Lake	3497	DBSS	8/27/97	-	5.7	5	4.6	9.33	21.58	7.44	44.9	0.03	105.3	-	218
Hidden Lake	3497	DBSS	8/27/97	-	5.7	4	5.4	10.33	19.92	7.05	42.8	0.03	112.9	-	228
Hidden Lake	3497	DBSS	8/27/97	-	5.7	3	6.5	3.7	17.44	6.73	47.1	0.03	38.4	-	208
Hidden Lake	3497	DBSS	8/27/97	-	5.7	2	7.5	0.3	14.92	6.67	57.7	0.04	2.9	-	147
Hidden Lake	3497	DBSS	8/27/97	-	5.7	1	8.4	0.4	13.88	6.6	79.9	0.05	3.9	-	139

Hidden Lake	3797	DBAS	9/16/97	-	2.5	9	0.2	8.74	18.01	7.31	47.1	0.03	92.1	-	296
Hidden Lake	3797	DBAS	9/16/97	-	2.5	8	1.2	8.75	18	7.3	47.2	0.03	92.3	-	295
Hidden Lake	3797	DBAS	9/16/97	-	2.5	7	2.2	8.68	17.9	7.27	47.1	0.03	91.3	-	294
Hidden Lake	3797	DBAS	9/16/97	-	2.5	6	3.2	8.57	17.84	7.27	47.1	0.03	90	-	290
Hidden Lake	3797	DBAS	9/16/97	-	2.5	5	4.2	8.63	17.79	7.27	47.1	0.03	90.4	-	286
Hidden Lake	3797	DBAS	9/16/97	-	2.5	4	5.2	8.75	17.73	7.24	47.1	0.03	91.7	-	281
Hidden Lake	3797	DBAS	9/16/97	-	2.5	3	6.2	8	17.44	7.12	49.2	0.03	83.4	-	278
Hidden Lake	3797	DBAS	9/16/97	-	2.5	2	7.2	7.77	17.12	7.07	50.9	0.03	80.4	-	264
Hidden Lake	3797	DBAS	9/16/97	-	2.5	1	8.2	7.96	17.05	7.05	51	0.03	82.3	-	245
Hidden Lake	3997	ASRA	9/29/97	-	3.5	10	0.2	9.65	17.34	7.45	48.2	0.03	101.6	-	350
Hidden Lake	3997	ASRA	9/29/97	-	3.5	9	1.6	9.68	16.21	7.44	48.1	0.03	99.6	-	349
Hidden Lake	3997	ASRA	9/29/97	-	3.5	8	2.4	9.67	15.91	7.44	48.2	0.03	98.8	-	348
Hidden Lake	3997	ASRA	9/29/97	-	3.5	7	3.2	9.61	15.86	7.42	48.2	0.03	98.1	-	347
Hidden Lake	3997	ASRA	9/29/97	-	3.5	6	4	9.5	15.82	7.4	48.2	0.03	97.1	-	346
Hidden Lake	3997	ASRA	9/29/97	-	3.5	5	4.7	9.4	15.77	7.37	48.3	0.03	95.7	-	344
Hidden Lake	3997	ASRA	9/29/97	-	3.5	4	5.6	9.36	15.67	7.34	48.1	0.03	95.2	-	340
Hidden Lake	3997	ASRA	9/29/97	-	3.5	3	6.4	8.83	15.47	7.33	48.7	0.03	89.4	-	333
Hidden Lake	3997	ASRA	9/29/97	-	3.5	2	7.2	9.16	15.34	7.35	48.9	0.03	92.4	-	328
Hidden Lake	3997	ASRA	9/29/97	-	3.5	1	8	9.44	15.32	7.36	48.6	0.03	95.2	-	319
Hidden Lake	4297	DBAS	10/20/97	-	2.5	9	0.3	10.76	11.63	7.44	54.2	0.03	97.8	-	350
Hidden Lake	4297	DBAS	10/20/97	-	2.5	8	1	10.76	11.43	7.46	54	0.03	97.5	-	349
Hidden Lake	4297	DBAS	10/20/97	-	2.5	7	2	10.76	11.25	7.42	54.2	0.03	97.1	-	351
Hidden Lake	4297	DBAS	10/20/97	-	2.5	6	3	10.64	11.12	7.39	54.3	0.03	95.7	-	351
Hidden Lake	4297	DBAS	10/20/97	-	2.5	5	4	10.71	11.05	7.38	54.1	0.03	96.2	-	350
Hidden Lake	4297	DBAS	10/20/97	-	2.5	4	5	10.72	11.02	7.37	54.2	0.03	96.2	-	349
Hidden Lake	4297	DBAS	10/20/97	-	2.5	3	6	10.75	11	7.31	54.3	0.03	96.5	-	351
Hidden Lake	4297	DBAS	10/20/97	-	2.5	2	7	10.77	11	7.28	54.2	0.03	96.6	-	351
Hidden Lake	4297	DBAS	10/20/97	-	2.5	1	8	10.89	10.86	7.25	54.3	0.03	97.4	-	350

Hidden Lake	4497	DBAS	11/3/97	-	2.4	9	0.2	11.64	7.48	8.83	53.2	0.03	100	*****	425
Hidden Lake	4497	DBAS	11/3/97	-	2.4	8	1	11.57	7.44	8.73	53.2	0.03	99.1	*****	427
Hidden Lake	4497	DBAS	11/3/97	-	2.4	7	2	11.5	7.44	8.65	53.1	0.03	98.3	*****	426
Hidden Lake	4497	DBAS	11/3/97	-	2.4	6	3	11.5	7.41	8.61	53.3	0.03	98.2	*****	425
Hidden Lake	4497	DBAS	11/3/97	-	2.4	5	4	11.48	7.43	8.61	53.2	0.03	98.1	*****	422
Hidden Lake	4497	DBAS	11/3/97	-	2.4	4	5	11.38	7.37	8.6	53.2	0.03	97.2	*****	423
Hidden Lake	4497	DBAS	11/3/97	-	2.4	3	6	11.17	7.36	8.45	53.5	0.03	95	*****	422
Hidden Lake	4497	DBAS	11/3/97	-	2.4	2	7	11.03	7.35	8.32	53.6	0.03	93.6	*****	422
Hidden Lake	4497	DBAS	11/3/97	-	2.4	1	7.8	11.02	7.36	8.32	53.7	0.03	93.3	*****	433

Location	Phase	Sampler	Date	Time	Secchi	Sequence	Depth (m)	Dissolved Oxygen (mg/l)	Temperature (C)	pH	Conductivity (µs/cm)	TDS	Percent Saturation	Statime	Redox
Round Lake	1597	DBAC	5/16/97	-	0.4	12	0.2	11.03	10.79	7	26.7	0.02	99	-	372
Round Lake	1597	DBAC	5/16/97	-	0.4	11	0.2	11.11	10.63	7.03	27	0.02	99	-	372
Round Lake	1597	DBAC	5/16/97	-	0.4	10	0.2	11.09	10.63	7.05	27	0.02	98.9	-	371
Round Lake	1597	DBAC	5/16/97	-	0.4	9	1.7	11.09	10.33	7.04	26.9	0.02	98.3	-	373
Round Lake	1597	DBAC	5/16/97	-	0.4	8	1.7	11.06	10.35	7.03	26.8	0.02	98	-	373
Round Lake	1597	DBAC	5/16/97	-	0.4	7	1.7	11.07	10.36	7.02	26.9	0.02	98.2	-	374
Round Lake	1597	DBAC	5/16/97	-	0.4	6	2.8	11.15	8.61	7.06	26.5	0.02	94.7	-	373
Round Lake	1597	DBAC	5/16/97	-	0.4	5	2.8	11.13	8.6	7.06	26.5	0.02	94.5	-	373
Round Lake	1597	DBAC	5/16/97	-	0.4	4	2.8	11.1	8.59	7.06	26.5	0.02	94.2	-	373
Round Lake	1597	DBAC	5/16/97	-	0.4	3	3.9	11.17	8.33	7.06	26.4	0.02	94.3	-	373
Round Lake	1597	DBAC	5/16/97	-	0.4	2	3.9	11.2	8.32	7.06	26.3	0.02	94.5	-	373
Round Lake	1597	DBAC	5/16/97	-	0.4	1	3.9	11.24	8.3	7.06	26.6	0.02	94.8	-	373
Round Lake	2197	DBSS	5/29/97	-	1.4	12	0.3	11.02	10.86	7.11	26.5	0.02	99	-	365
Round Lake	2197	DBSS	5/29/97	-	1.4	11	0.3	11.03	10.92	7.1	26.4	0.02	99.3	-	366
Round Lake	2197	DBSS	5/29/97	-	1.4	10	0.2	11.01	11	7.1	26.2	0.02	99.3	-	366
Round Lake	2197	DBSS	5/29/97	-	1.4	9	1.2	11.39	9.71	7.11	26.6	0.02	99.7	-	366
Round Lake	2197	DBSS	5/29/97	-	1.4	8	1.2	11.37	9.69	7.13	26.7	0.02	99.4	-	366
Round Lake	2197	DBSS	5/29/97	-	1.4	7	1.2	11.35	9.73	7.12	26.7	0.02	99.4	-	366
Round Lake	2197	DBSS	5/29/97	-	1.4	6	2.4	11.44	9.5	7.09	26.7	0.02	99.5	-	368

Round Lake	2197	DBSS	5/29/97	-	1.4	5	2.4	11.44	9.51	7.1	26.3	0.02	99.4	-	368
Round Lake	2197	DBSS	5/29/97	-	1.4	4	2.4	11.5	9.45	7.1	26.7	0.02	99.8	-	367
Round Lake	2197	DBSS	5/29/97	-	1.4	3	3.3	11.53	9.2	7.09	26.7	0.02	99.6	-	368
Round Lake	2197	DBSS	5/29/97	-	1.4	2	3.3	11.54	9.22	7.08	26.4	0.02	99.7	-	369
Round Lake	2197	DBSS	5/29/97	-	1.4	1	3.3	11.54	9.23	7.09	26.4	0.02	99.8	-	368
Round Lake	2397	DBAS	6/11/97	-	1.8	10	0.3	10.67	13.47	7.14	29.4	0.02	102.1	-	398
Round Lake	2397	DBAS	6/11/97	-	1.8	9	0.3	10.65	13.45	7.15	29.6	0.02	101.9	-	397
Round Lake	2397	DBAS	6/11/97	-	1.8	8	0.3	10.67	13.45	7.15	29.5	0.02	102.1	-	398
Round Lake	2397	DBAS	6/11/97	-	1.8	7	1	11.08	11.69	7.19	29	0.02	101.9	-	398
Round Lake	2397	DBAS	6/11/97	-	1.8	6	1	11.02	11.81	7.19	29.1	0.02	101.6	-	398
Round Lake	2397	DBAS	6/11/97	-	1.8	5	1	10.99	12	7.19	29	0.02	101.8	-	398
Round Lake	2397	DBAS	6/11/97	-	1.8	4	0.9	10.85	12.21	7.19	29	0.02	100.9	-	398
Round Lake	2397	DBAS	6/11/97	-	1.8	3	1.5	11.29	11.28	7.21	28.6	0.02	102.8	-	401
Round Lake	2397	DBAS	6/11/97	-	1.8	2	1.5	11.25	11.38	7.22	28.7	0.02	102.7	-	400
Round Lake	2397	DBAS	6/11/97	-	1.8	1	1.6	11.27	11.43	7.21	28.6	0.02	103	-	401
Round Lake	2597	DBSS	6/26/97	-	1.5	10	0.3	11.34	11.69	7.21	32.4	0.02	104.1	-	398
Round Lake	2597	DBSS	6/26/97	-	1.5	9	0.3	11.37	11.7	7.21	31.9	0.02	104.3	-	398
Round Lake	2597	DBSS	6/26/97	-	1.5	8	0.3	11.26	11.95	7.2	32.1	0.02	104.2	-	399
Round Lake	2597	DBSS	6/26/97	-	1.5	7	0.9	11.34	11.21	7.18	32.1	0.02	103	-	401
Round Lake	2597	DBSS	6/26/97	-	1.5	6	0.9	11.25	11.23	7.19	32	0.02	102.2	-	400
Round Lake	2597	DBSS	6/26/97	-	1.5	5	1	11.3	11.02	7.2	31.9	0.02	102.2	-	401
Round Lake	2597	DBSS	6/26/97	-	1.5	4	1.4	11.28	10.98	7.19	31.7	0.02	101.9	-	401
Round Lake	2597	DBSS	6/26/97	-	1.5	3	1.4	11.32	10.92	7.2	31.9	0.02	102.1	-	402
Round Lake	2597	DBSS	6/26/97	-	1.5	2	1.5	11.31	10.95	7.2	31.9	0.02	102.1	-	402
Round Lake	2597	DBSS	6/26/97	-	1.5	1	1.6	11.32	10.95	7.19	31.8	0.02	102.1	-	403
Round Lake	2797	DBSS	7/8/97	-	0.6	2	0.2	9.73	16.76	7.33	35.3	0.02	99.6	-	399
Round Lake	2797	DBSS	7/8/97	-	0.6	1	0.6	10.33	16.11	7.36	35.1	0.02	*****	-	397

Round Lake	2997	SSJD	7/24/97	-	1.7	10	0.3	9.48	19.4	7.27	37.9	0.02	*****	-	405
Round Lake	2997	SSJD	7/24/97	-	1.7	9	0.3	9.47	19.26	7.26	37.9	0.02	*****	-	405
Round Lake	2997	SSJD	7/24/97	-	1.7	8	0.3	9.49	19.28	7.25	38	0.02	*****	-	406
Round Lake	2997	SSJD	7/24/97	-	1.7	7	0.9	9.37	18.66	7.25	37.8	0.02	99.8	-	408
Round Lake	2997	SSJD	7/24/97	-	1.7	6	0.9	9.31	18.63	7.26	37.8	0.02	99	-	408
Round Lake	2997	SSJD	7/24/97	-	1.7	5	0.9	9.36	18.66	7.25	37.8	0.02	99.6	-	408
Round Lake	2997	SSJD	7/24/97	-	1.7	4	0.9	9.37	18.7	7.25	37.9	0.02	99.6	-	408
Round Lake	2997	SSJD	7/24/97	-	1.7	3	1.7	9.47	18.51	7.32	37.8	0.02	*****	-	406
Round Lake	2997	SSJD	7/24/97	-	1.7	2	1.7	9.48	18.51	7.34	37.9	0.02	*****	-	408
Round Lake	2997	SSJD	7/24/97	-	1.7	1	1.7	9.56	18.51	7.38	37.9	0.02	*****	-	411
Round Lake	3197	DBSS	8/5/97	-	1.7	2	0.3	9.22	22.77	7.55	44.2	0.03	105.6	-	334
Round Lake	3197	DBSS	8/5/97	-	1.7	1	1.5	9.56	21.9	7.68	44.2	0.03	107.6	-	329
Round Lake	3297	DBSS	8/14/97	-	1.4	2	0.3	9.3	23.91	7.92	48.7	0.03	109.5	-	292
Round Lake	3297	DBSS	8/14/97	-	1.4	1	1.3	9.75	23.42	8.12	49.1	0.03	113.8	-	280
Round Lake	3497	DBSS	8/27/97	-	2.1	3	0.3	9.01	21.21	7.35	55.7	0.04	100.9	-	294
Round Lake	3497	DBSS	8/27/97	-	2.1	2	1	8.93	20.84	7.35	55.5	0.04	99.5	-	292
Round Lake	3497	DBSS	8/27/97	-	2.1	1	1.9	9.11	20.72	7.38	55.6	0.04	101.1	-	287
Round Lake	3797	DBAS	9/16/97	-	1.3	2	0.2	8.62	17.39	7.29	55.6	0.04	89.7	-	286
Round Lake	3797	DBAS	9/16/97	-	1.3	1	1	8.87	17.39	7.31	55.5	0.04	92.2	-	285
Round Lake	3997	ASRA	9/29/97	-	1.5	8	0.3	11.35	15.24	7.44	51.9	0.03	114.5	-	377
Round Lake	3997	ASRA	9/29/97	-	1.5	7	0.3	11.35	15.25	7.45	51.9	0.03	114.3	-	376
Round Lake	3997	ASRA	9/29/97	-	1.5	6	0.3	11.37	15.27	7.45	51.9	0.03	114.6	-	376
Round Lake	3997	ASRA	9/29/97	-	1.5	5	0.3	11.36	15.29	7.46	51.9	0.03	114.6	-	376
Round Lake	3997	ASRA	9/29/97	-	1.5	4	1.5	11.38	14.79	7.49	51.9	0.03	113.5	-	375
Round Lake	3997	ASRA	9/29/97	-	1.5	3	1.5	11.28	14.69	7.5	52.1	0.03	112.3	-	374
Round Lake	3997	ASRA	9/29/97	-	1.5	2	1.5	10.91	14.71	7.5	51.9	0.03	108.6	-	374

Round Lake	3997	ASRA	9/29/97	-	1.5	1	1.5	11.51	14.67	7.51	51.9	0.03	115.9	-	373
Round Lake	4297	DBAS	10/20/97	-	1.2	3	0.3	10.65	9.38	6.97	57.2	0.04	91.9	-	381
Round Lake	4297	DBAS	10/20/97	-	1.2	2	0.8	10.68	9.35	6.96	57.1	0.04	92.2	-	382
Round Lake	4297	DBAS	10/20/97	-	1.2	1	1.3	10.87	9.19	6.93	57.1	0.04	93.4	-	384
Round Lake	4497	DBAS	11/3/97	-	1	2	0.3	11.93	7.13	6.68	38.7	0.02	97.1	*****	429
Round Lake	4497	DBAS	11/3/97	-	1	1	1.2	11.99	7.11	6.68	38.5	0.02	97.6	*****	431

Location	Phase	Sampler	Date	Time	Secchi	Sequence	Depth (m)	Dissolved Oxygen (mg/l)	Temperature (C)	pH	Conductivity (μs/cm)	TDS	Percent Saturation	Statime	Redox
Chatcolet Lake	1597	ASSS	4/18/97	-	1.5	3	0.5	12.66	6.96	7.41	38.3	0.02	*****	-	380
Chatcolet Lake	1597	ASSS	4/18/97	-	1.5	2	5.4	12.37	5.98	7.41	36.3	0.02	99.3	-	381
Chatcolet Lake	1597	ASSS	4/18/97	-	1.5	1	10.4	12.45	5.7	7.41	33.5	0.02	99	-	381
Chatcolet Lake	1997	DBSS	5/16/97	-	1.4	14	0.2	11.31	14.46	7.12	33.7	0.02	110	-	368
Chatcolet Lake	1997	DBSS	5/16/97	-	1.4	13	0.8	11.32	13.83	7.08	33.3	0.02	108.6	-	371
Chatcolet Lake	1997	DBSS	5/16/97	-	1.4	12	1.8	11.46	12.2	7.03	32.6	0.02	106.3	-	373
Chatcolet Lake	1997	DBSS	5/16/97	-	1.4	11	2.7	11.37	11.66	7.01	32	0.02	103.9	-	374
Chatcolet Lake	1997	DBSS	5/16/97	-	1.4	10	3.7	11	10.94	6.95	30.5	0.02	98.7	-	376
Chatcolet Lake	1997	DBSS	5/16/97	-	1.4	9	4.7	10.91	9.76	6.93	28.8	0.02	95.4	-	378
Chatcolet Lake	1997	DBSS	5/16/97	-	1.4	8	5.6	10.84	9.3	6.9	10.84	*****	5.6	-	376
Chatcolet Lake	1997	DBSS	5/16/97	-	1.4	7	6.7	10.87	9.09	6.95	27.9	0.02	93.4	-	376
Chatcolet Lake	1997	DBSS	5/16/97	-	1.4	6	7.7	10.88	9.02	6.95	27.9	0.02	93.4	-	376
Chatcolet Lake	1997	DBSS	5/16/97	-	1.4	5	8.7	10.89	8.6	6.94	30.2	0.02	92.5	-	377
Chatcolet Lake	1997	DBSS	5/16/97	-	1.4	4	9.7	10.86	8.5	6.94	30.3	0.02	92.1	-	377
Chatcolet Lake	1997	DBSS	5/16/97	-	1.4	3	10.6	10.75	8.32	6.94	31	0.02	90.7	-	376
Chatcolet Lake	1997	DBSS	5/16/97	-	1.4	2	11.6	10.03	7.54	6.92	35.2	0.02	83.2	-	378
Chatcolet Lake	1997	DBSS	5/16/97	-	1.4	1	12.7	10.04	7.48	6.92	35.4	0.02	83	-	377

Chatcolet Lake	2197	DBSS	5/29/97	-	1.6	11	0.3	10.62	13.44	6.98	27.4	0.02	101.2	-	360
Chatcolet Lake	2197	DBSS	5/29/97	-	1.6	10	2.3	10.9	9.6	6.97	26.8	0.02	95	-	363
Chatcolet Lake	2197	DBSS	5/29/97	-	1.6	9	3.4	10.8	8.6	6.98	26.7	0.02	91.9	-	362
Chatcolet Lake	2197	DBSS	5/29/97	-	1.6	8	4.5	10.85	8.55	6.96	26.6	0.02	92.2	-	363
Chatcolet Lake	2197	DBSS	5/29/97	-	1.6	7	6.5	10.88	8.35	6.96	26.5	0.02	92.1	-	362
Chatcolet Lake	2197	DBSS	5/29/97	-	1.6	6	7.4	10.88	8.29	6.95	26.4	0.02	91.9	-	362
Chatcolet Lake	2197	DBSS	5/29/97	-	1.6	5	8.4	11.07	8.11	6.95	26.5	0.02	93.1	-	361
Chatcolet Lake	2197	DBSS	5/29/97	-	1.6	4	9.3	11.05	7.88	6.95	26.4	0.02	92.4	-	360
Chatcolet Lake	2197	DBSS	5/29/97	-	1.6	3	10.4	11.03	7.86	6.93	26.4	0.02	92.2	-	360
Chatcolet Lake	2197	DBSS	5/29/97	-	1.6	2	11.4	11	7.78	6.92	26.4	0.02	91.8	-	359
Chatcolet Lake	2197	DBSS	5/29/97	-	1.6	1	12.3	10.3	7.73	6.91	27.3	0.02	85.8	-	359
Chatcolet Lake	2397	DBAS	6/13/97	-	2.1	12	0.1	11.24	12.99	7.2	29.1	0.02	106.4	-	417
Chatcolet Lake	2397	DBAS	6/13/97	-	2.1	11	1	11.23	11.66	7.23	28.3	0.02	103.2	-	417
Chatcolet Lake	2397	DBAS	6/13/97	-	2.1	10	1.9	11.08	10.38	7.21	27.5	0.02	98.8	-	419
Chatcolet Lake	2397	DBAS	6/13/97	-	2.1	9	3	11.09	10	7.19	27.5	0.02	98	-	421
Chatcolet Lake	2397	DBAS	6/13/97	-	2.1	8	3.9	11.16	9.82	7.19	27.2	0.02	98.1	-	421
Chatcolet Lake	2397	DBAS	6/13/97	-	2.1	7	4.9	11.2	9.72	7.19	27.1	0.02	98.2	-	421
Chatcolet Lake	2397	DBAS	6/13/97	-	2.1	6	6	11.07	9.67	7.2	27.1	0.02	97	-	421
Chatcolet Lake	2397	DBAS	6/13/97	-	2.1	5	7	11.15	9.15	7.21	26.9	0.02	96.5	-	421
Chatcolet Lake	2397	DBAS	6/13/97	-	2.1	4	8	11.07	9.02	7.21	27	0.02	95.5	-	421
Chatcolet Lake	2397	DBAS	6/13/97	-	2.1	3	8.9	10.94	8.99	7.23	27.1	0.02	94.3	-	421
Chatcolet Lake	2397	DBAS	6/13/97	-	2.1	2	9.8	10.84	9.04	7.26	27.3	0.02	93.5	-	419
Chatcolet Lake	2397	DBAS	6/13/97	-	2.1	1	10.9	10.85	8.99	7.29	27.3	0.02	93.4	-	417
Chatcolet Lake	2597	DBSS	6/26/97	-	2.5	11	0.3	10.94	14.59	7.21	31.5	0.02	107.3	-	373
Chatcolet Lake	2597	DBSS	6/26/97	-	2.5	10	1.4	10.94	14.45	7.17	31.5	0.02	106.9	-	375
Chatcolet Lake	2597	DBSS	6/26/97	-	2.5	9	2.5	11.03	13.45	7.17	31.5	0.02	105.5	-	375
Chatcolet Lake	2597	DBSS	6/26/97	-	2.5	8	3.6	10.97	13.25	7.15	31.4	0.02	104.4	-	375
Chatcolet Lake	2597	DBSS	6/26/97	-	2.5	7	4.6	10.99	12.95	7.12	31.2	0.02	103.8	-	375

Chatcolet Lake	2597	DBSS	6/26/97	-	2.5	6	5.6	10.93	12.74	7.09	31.5	0.02	102.8	-	374
Chatcolet Lake	2597	DBSS	6/26/97	-	2.5	5	6.6	10.97	12.1	7.04	31.6	0.02	101.8	-	375
Chatcolet Lake	2597	DBSS	6/26/97	-	2.5	4	7.7	10.35	10.92	7	30.9	0.02	93.4	-	375
Chatcolet Lake	2597	DBSS	6/26/97	-	2.5	3	8.7	9.68	10.68	6.98	30.2	0.02	86.8	-	374
Chatcolet Lake	2597	DBSS	6/26/97	-	2.5	2	9.7	9.38	10.12	6.99	30.4	0.02	83	-	372
Chatcolet Lake	2597	DBSS	6/26/97	-	2.5	1	10.6	9.44	10.1	7.02	30.6	0.02	83.5	-	370
Chatcolet Lake	2797	DBSS	7/8/97	-	1.8	12	0.3	10.25	17.45	7.19	35.2	0.02	*****	-	411
Chatcolet Lake	2797	DBSS	7/8/97	-	1.8	11	0.9	10.23	17.39	7.17	35.2	0.02	*****	-	411
Chatcolet Lake	2797	DBSS	7/8/97	-	1.8	10	2.1	10.2	17.17	7.11	35.1	0.02	*****	-	413
Chatcolet Lake	2797	DBSS	7/8/97	-	1.8	9	3.1	9.99	16.11	7.05	35.1	0.02	*****	-	416
Chatcolet Lake	2797	DBSS	7/8/97	-	1.8	8	4	9.88	15.35	7.02	34.9	0.02	98.1	-	417
Chatcolet Lake	2797	DBSS	7/8/97	-	1.8	7	5	9.83	14.71	6.97	33.8	0.02	96.2	-	418
Chatcolet Lake	2797	DBSS	7/8/97	-	1.8	6	6	9.84	13.13	6.94	33.3	0.02	93	-	420
Chatcolet Lake	2797	DBSS	7/8/97	-	1.8	5	7	9.5	12.69	6.91	33.1	0.02	88.9	-	421
Chatcolet Lake	2797	DBSS	7/8/97	-	1.8	4	8.1	8.93	12.39	6.89	33.3	0.02	83	-	421
Chatcolet Lake	2797	DBSS	7/8/97	-	1.8	3	9	9.12	12.25	6.89	33.2	0.02	84.5	-	421
Chatcolet Lake	2797	DBSS	7/8/97	-	1.8	2	10.1	8.4	11.77	6.9	33.3	0.02	77	-	418
Chatcolet Lake	2797	DBSS	7/8/97	-	1.8	1	11	8.23	11.64	7	33.7	0.02	75.2	-	423
Chatcolet Lake	2997	SSJD	7/24/97	-	3.7	12	0.6	9.86	22.15	7.99	36.4	0.02	*****	-	378
Chatcolet Lake	2997	SSJD	7/24/97	-	3.7	11	1.8	9.85	22.15	7.96	36.4	0.02	*****	-	378
Chatcolet Lake	2997	SSJD	7/24/97	-	3.7	10	2.9	9.97	21.67	7.85	36.8	0.02	*****	-	379
Chatcolet Lake	2997	SSJD	7/24/97	-	3.7	9	3.9	9.81	19.33	7.18	35.8	0.02	*****	-	402
Chatcolet Lake	2997	SSJD	7/24/97	-	3.7	8	4.9	10.24	16.32	7.08	33.2	0.02	*****	-	406
Chatcolet Lake	2997	SSJD	7/24/97	-	3.7	7	5.9	9.79	14.49	6.93	32.4	0.02	95.4	-	410
Chatcolet Lake	2997	SSJD	7/24/97	-	3.7	6	6.9	8.29	13.58	6.84	32.1	0.02	79.2	-	413
Chatcolet Lake	2997	SSJD	7/24/97	-	3.7	5	7.9	7.71	13.1	6.82	32.2	0.02	72.9	-	413
Chatcolet Lake	2997	SSJD	7/24/97	-	3.7	4	8.9	6.88	12.72	6.82	32.4	0.02	64.5	-	411
Chatcolet Lake	2997	SSJD	7/24/97	-	3.7	3	10	5.03	12.03	6.87	34.1	0.02	46.5	-	408
Chatcolet Lake	2997	SSJD	7/24/97	-	3.7	2	10.9	5.19	12.08	6.97	34.1	0.02	47.9	-	402

Chatcolet Lake	2997	SSJD	7/24/97	-	3.7	1	0	0	0	0	0	0	0	-	0
Chatcolet Lake	3197	DBSS	8/5/97	-	3	13	0.3	11.59	24.51	9.28	42.3	0.03	137.1	-	289
Chatcolet Lake	3197	DBSS	8/5/97	-	3	12	1.7	11.55	24.37	9.22	42.2	0.03	136.3	-	290
Chatcolet Lake	3197	DBSS	8/5/97	-	3	11	2.7	10.64	23.4	8.86	40.4	0.03	123.3	-	299
Chatcolet Lake	3197	DBSS	8/5/97	-	3	10	3.6	10.13	22.02	7.49	39.2	0.03	114.4	-	331
Chatcolet Lake	3197	DBSS	8/5/97	-	3	9	4.6	9.8	18.9	7.05	35.8	0.02	104.2	-	349
Chatcolet Lake	3197	DBSS	8/5/97	-	3	8	5.6	9.77	16.32	6.97	33	0.02	98.4	-	351
Chatcolet Lake	3197	DBSS	8/5/97	-	3	7	6.5	8.09	14.44	6.84	33	0.02	78.2	-	353
Chatcolet Lake	3197	DBSS	8/5/97	-	3	6	7.5	6.42	13.55	6.79	33.4	0.02	60.9	-	353
Chatcolet Lake	3197	DBSS	8/5/97	-	3	5	8.4	5.49	13.15	6.79	33.6	0.02	51.6	-	351
Chatcolet Lake	3197	DBSS	8/5/97	-	3	4	9.5	3.45	12.3	6.81	36.1	0.02	31.8	-	347
Chatcolet Lake	3197	DBSS	8/5/97	-	3	3	10.5	3.05	12.11	6.89	36.7	0.02	28	-	342
Chatcolet Lake	3197	DBSS	8/5/97	-	3	2	11.5	2.57	12.07	7.03	38.4	0.02	23.5	-	335
Chatcolet Lake	3197	DBSS	8/5/97	-	3	1	12.4	2.5	12.13	7.18	39.3	0.03	23	-	343
Chatcolet Lake	3297	DBSS	8/13/97	-	3.5	10	0.8	9.41	22.99	8.77	42.9	0.03	108.9	-	339
Chatcolet Lake	3297	DBSS	8/13/97	-	3.5	9	1.8	9.41	22.58	8.71	42.7	0.03	108.2	-	341
Chatcolet Lake	3297	DBSS	8/13/97	-	3.5	8	2.8	9.27	21.79	8.4	42	0.03	104.7	-	348
Chatcolet Lake	3297	DBSS	8/13/97	-	3.5	7	3.8	8.8	21	7.58	39.8	0.03	98	-	371
Chatcolet Lake	3297	DBSS	8/13/97	-	3.5	6	4.8	8.7	20.35	7.29	39.1	0.03	95.7	-	379
Chatcolet Lake	3297	DBSS	8/13/97	-	3.5	5	5.8	8.91	18.18	6.95	35.4	0.02	93.9	-	392
Chatcolet Lake	3297	DBSS	8/13/97	-	3.5	4	6.8	6.33	15.19	6.8	34.4	0.02	62.6	-	399
Chatcolet Lake	3297	DBSS	8/13/97	-	3.5	3	7.9	5.85	14.18	6.8	34.9	0.02	56.6	-	399
Chatcolet Lake	3297	DBSS	8/13/97	-	3.5	2	8.8	4.53	13.48	6.82	35.8	0.02	43.2	-	399
Chatcolet Lake	3297	DBSS	8/13/97	-	3.5	1	9.8	2.8	13.1	6.87	39.2	0.03	26.5	-	398
Chatcolet Lake	3497	DBSS	8/27/97	-	4.4	12	0.4	9.51	21.99	8.48	47.3	0.03	108.2	-	271
Chatcolet Lake	3497	DBSS	8/27/97	-	4.4	11	0.7	9.54	21.97	8.49	47.4	0.03	108.4	-	267
Chatcolet Lake	3497	DBSS	8/27/97	-	4.4	10	1.7	9.55	21.93	8.47	47.4	0.03	108.5	-	267
Chatcolet Lake	3497	DBSS	8/27/97	-	4.4	9	2.7	9.52	21.65	8.38	47.3	0.03	107.5	-	267

Chatcolet Lake	3497	DBSS	8/27/97	-	4.4	8	3.7	9.54	21.51	8.34	48.8	0.03	107.5	-	265
Chatcolet Lake	3497	DBSS	8/27/97	-	4.4	7	4.7	9.29	21.19	7.74	45.6	0.03	104.1	-	276
Chatcolet Lake	3497	DBSS	8/27/97	-	4.4	6	5.7	8.58	20.37	7.14	44.4	0.03	94.7	-	297
Chatcolet Lake	3497	DBSS	8/27/97	-	4.4	5	6.7	5.59	17.27	6.77	40.6	0.03	57.9	-	313
Chatcolet Lake	3497	DBSS	8/27/97	-	4.4	4	7.7	4.07	16.17	6.73	40.6	0.03	41.1	-	311
Chatcolet Lake	3497	DBSS	8/27/97	-	4.4	3	8.8	1.34	13.79	6.75	42.7	0.03	12.9	-	305
Chatcolet Lake	3497	DBSS	8/27/97	-	4.4	2	9.8	0.64	13.33	6.84	46.9	0.03	6.1	-	296
Chatcolet Lake	3497	DBSS	8/27/97	-	4.4	1	10.7	0.52	13.09	6.98	49	0.03	4.9	-	284
Chatcolet Lake	3797	DBAS	9/16/97	-	2.2	11	0.3	9.12	17.71	7.49	46.4	0.03	95.6	-	251
Chatcolet Lake	3797	DBAS	9/16/97	-	2.2	10	1.7	9.11	17.71	7.48	46.4	0.03	95.4	-	248
Chatcolet Lake	3797	DBAS	9/16/97	-	2.2	9	2.7	9.05	17.69	7.45	46.4	0.03	94.8	-	246
Chatcolet Lake	3797	DBAS	9/16/97	-	2.2	8	3.7	9.02	17.67	7.42	46.4	0.03	94.4	-	244
Chatcolet Lake	3797	DBAS	9/16/97	-	2.2	7	4.7	8.93	17.66	7.39	46.3	0.03	93.5	-	241
Chatcolet Lake	3797	DBAS	9/16/97	-	2.2	6	5.7	9.01	17.56	7.31	46.1	0.03	93.8	-	231
Chatcolet Lake	3797	DBAS	9/16/97	-	2.2	5	6.7	8.67	17.49	7.23	45.9	0.03	90.4	-	219
Chatcolet Lake	3797	DBAS	9/16/97	-	2.2	4	7.7	8.58	17.49	7.15	45.8	0.03	89.5	-	205
Chatcolet Lake	3797	DBAS	9/16/97	-	2.2	3	8.7	2.12	16.21	6.79	46.4	0.03	21	-	156
Chatcolet Lake	3797	DBAS	9/16/97	-	2.2	2	9.7	0.27	12.49	6.72	74.3	0.05	2.4	-	34
Chatcolet Lake	3797	DBAS	9/16/97	-	2.2	1	10.7	0.35	12.36	6.69	77.1	0.05	3.3	-	42
Chatcolet Lake	3997	ASRA	9/29/97	-	3.3	11	0.6	9.55	16.12	7.43	48.5	0.03	98	-	362
Chatcolet Lake	3997	ASRA	9/29/97	-	3.3	10	1.6	9.51	15.72	7.41	48.3	0.03	96.8	-	362
Chatcolet Lake	3997	ASRA	9/29/97	-	3.3	9	2.6	9.25	15.67	7.37	48.3	0.03	94.1	-	363
Chatcolet Lake	3997	ASRA	9/29/97	-	3.3	8	3.6	9.15	15.54	7.35	48.4	0.03	92.8	-	362
Chatcolet Lake	3997	ASRA	9/29/97	-	3.3	7	4.6	8.95	15.47	7.31	48.4	0.03	90.7	-	362
Chatcolet Lake	3997	ASRA	9/29/97	-	3.3	6	5.6	8.67	15.37	7.3	48.7	0.03	87.6	-	362
Chatcolet Lake	3997	ASRA	9/29/97	-	3.3	5	6.6	8.63	15.32	7.3	48.7	0.03	87.1	-	361
Chatcolet Lake	3997	ASRA	9/29/97	-	3.3	4	7.6	8.53	15.27	7.3	48.8	0.03	86.2	-	359
Chatcolet Lake	3997	ASRA	9/29/97	-	3.3	3	8.6	8.41	15.22	7.3	48.9	0.03	84.7	-	358
Chatcolet Lake	3997	ASRA	9/29/97	-	3.3	2	9.6	8.06	15.06	7.29	49.4	0.03	80.8	-	356

Chatcolet Lake	3997	ASRA	9/29/97	-	3.3	1	10.6	7.99	14.99	7.32	50.4	0.03	80	-	353
Chatcolet Lake	4297	DBAS	10/20/97	-	2.8	11	0.3	11.17	11.63	7.54	54.9	0.04	101.7	-	372
Chatcolet Lake	4297	DBAS	10/20/97	-	2.8	10	1	11.1	11.56	7.5	55	0.04	100.9	-	373
Chatcolet Lake	4297	DBAS	10/20/97	-	2.8	9	2	11.08	11.25	7.5	54.7	0.04	100	-	373
Chatcolet Lake	4297	DBAS	10/20/97	-	2.8	8	3	11.05	11.23	7.45	54.9	0.04	99.6	-	375
Chatcolet Lake	4297	DBAS	10/20/97	-	2.8	7	4	10.97	11.17	7.4	54.6	0.03	98.8	-	376
Chatcolet Lake	4297	DBAS	10/20/97	-	2.8	6	5	10.89	11.13	7.32	54.5	0.03	98	-	378
Chatcolet Lake	4297	DBAS	10/20/97	-	2.8	5	6	10.81	11.07	7.24	54.5	0.03	97.1	-	381
Chatcolet Lake	4297	DBAS	10/20/97	-	2.8	4	7	10.67	11.04	7.15	54.6	0.03	95.8	-	384
Chatcolet Lake	4297	DBAS	10/20/97	-	2.8	3	8	10.53	11	7.08	54.6	0.03	94.5	-	386
Chatcolet Lake	4297	DBAS	10/20/97	-	2.8	2	9	9.17	10.74	6.92	56.4	0.04	81.8	-	392
Chatcolet Lake	4297	DBAS	10/20/97	-	2.8	1	10	8.97	10.64	6.88	56.8	0.04	79.8	-	393
Chatcolet Lake	4497	DBAS	11/3/97	-	2	11	0.2	11.7	7.53	8.55	53.1	0.03	99.8	*****	418
Chatcolet Lake	4497	DBAS	11/3/97	-	2	10	1	11.7	7.5	8.55	53.3	0.03	99.8	*****	419
Chatcolet Lake	4497	DBAS	11/3/97	-	2	9	2	11.69	7.45	8.5	53.2	0.03	99.5	*****	421
Chatcolet Lake	4497	DBAS	11/3/97	-	2	8	3	11.69	7.43	8.4	53.2	0.03	99.3	*****	419
Chatcolet Lake	4497	DBAS	11/3/97	-	2	7	4	11.69	7.39	8.38	53.1	0.03	99.3	*****	420
Chatcolet Lake	4497	DBAS	11/3/97	-	2	6	5	11.7	7.38	8.37	53.1	0.03	99.4	*****	417
Chatcolet Lake	4497	DBAS	11/3/97	-	2	5	6	11.72	7.37	8.33	53.1	0.03	99.4	*****	416
Chatcolet Lake	4497	DBAS	11/3/97	-	2	4	7	11.77	7.31	8.19	52.5	0.03	99.5	*****	417
Chatcolet Lake	4497	DBAS	11/3/97	-	2	3	8	11.73	7.29	7.97	52	0.03	98.6	*****	416
Chatcolet Lake	4497	DBAS	11/3/97	-	2	2	9	11.46	7.25	7.55	52.2	0.03	95.4	*****	415
Chatcolet Lake	4497	DBAS	11/3/97	-	2	1	9.8	11.55	7.26	6.91	47.7	0.03	94.6	*****	414

Location	Phase	Sampler	Date	Time	Secchi	Sequence	Depth (m)	Dissolved Oxygen (mg/l)	Temperature (C)	pH	Conductivity (µs/cm)	TDS	Percent Saturation	Statime	Redox
Chatcolet Shallow	1597	ASSS	4/18/97	-	0.5	2	0.2	12.75	5.46	7.43	32.4	0.02	*****	-	325
Chatcolet Shallow	1597	ASSS	4/18/97	-	0.5	1	0.7	13.38	5.47	7.41	32.6	0.02	*****	-	320

Chatcolet Shallow	1997	DBSS	5/16/97	-	0.3	13	0.3	11.04	10.48	6.99	27.2	0.02	98.1	-	369
Chatcolet Shallow	1997	DBSS	5/16/97	-	0.3	12	0.3	11.05	10.49	7	27.2	0.02	98.2	-	369
Chatcolet Shallow	1997	DBSS	5/16/97	-	0.3	11	0.3	11.04	10.44	7.01	27.3	0.02	98	-	369
Chatcolet Shallow	1997	DBSS	5/16/97	-	0.3	10	0.3	11.03	10.46	7.01	27.2	0.02	98	-	369
Chatcolet Shallow	1997	DBSS	5/16/97	-	0.3	9	1.3	11.02	9.97	6.97	27	0.02	95.7	-	374
Chatcolet Shallow	1997	DBSS	5/16/97	-	0.3	8	1.3	11	9.89	6.96	27.1	0.02	96.4	-	374
Chatcolet Shallow	1997	DBSS	5/16/97	-	0.3	7	1.3	11.01	9.51	6.99	27	0.02	95.6	-	373
Chatcolet Shallow	1997	DBSS	5/16/97	-	0.3	6	1.3	10.97	10.15	6.95	27.4	0.02	96.7	-	375
Chatcolet Shallow	1997	DBSS	5/16/97	-	0.3	5	3.1	11.21	8.56	7	26.4	0.02	95.1	-	375
Chatcolet Shallow	1997	DBSS	5/16/97	-	0.3	4	3.1	11.21	8.58	6.99	26.3	0.02	95.2	-	375
Chatcolet Shallow	1997	DBSS	5/16/97	-	0.3	3	3.1	11.22	8.55	6.99	26.3	0.02	95.2	-	376
Chatcolet Shallow	1997	DBSS	5/16/97	-	0.3	2	3.1	11.22	8.59	7	26.3	0.02	95.3	-	375
Chatcolet Shallow	1997	DBSS	5/16/97	-	0.3	1	3.1	11.21	8.56	7.01	26.4	0.02	95.1	-	375
Chatcolet Shallow	2197	DBSS	5/29/97	-	1.6	10	0.2	10.8	11.38	7.04	26.8	0.02	98.2	-	368
Chatcolet Shallow	2197	DBSS	5/29/97	-	1.6	9	0.2	10.85	11.72	7.1	18.3	0.01	99.5	-	363
Chatcolet Shallow	2197	DBSS	5/29/97	-	1.6	8	0.2	10.87	11.59	7.1	15.3	0.01	99.3	-	364
Chatcolet Shallow	2197	DBSS	5/29/97	-	1.6	7	1.4	11.32	9.74	7.07	26.7	0.02	99	-	368
Chatcolet Shallow	2197	DBSS	5/29/97	-	1.6	6	1.4	11.32	9.69	7.07	26.7	0.02	99.1	-	368
Chatcolet Shallow	2197	DBSS	5/29/97	-	1.6	5	1.4	11.35	9.68	7.08	26.6	0.02	99.4	-	368
Chatcolet Shallow	2197	DBSS	5/29/97	-	1.6	4	2.3	11.51	9.32	7.08	26.5	0.02	99.7	-	369
Chatcolet Shallow	2197	DBSS	5/29/97	-	1.6	3	2.3	11.53	9.32	7.08	26.5	0.02	99.9	-	369
Chatcolet Shallow	2197	DBSS	5/29/97	-	1.6	2	2.3	11.52	9.33	7.07	26.5	0.02	100	-	369
Chatcolet Shallow	2197	DBSS	5/29/97	-	1.6	1	2.4	11.57	9.35	7.08	26.6	0.02	100.3	-	368
Chatcolet Shallow	2397	DBAS	6/11/97	-	1.6	10	0.4	10.75	11.8	7.09	28.7	0.02	99.1	-	394
Chatcolet Shallow	2397	DBAS	6/11/97	-	1.6	9	0.4	10.7	11.74	7.1	28.8	0.02	98.5	-	395
Chatcolet Shallow	2397	DBAS	6/11/97	-	1.6	8	0.3	10.71	11.86	7.11	28.7	0.02	98.8	-	394
Chatcolet Shallow	2397	DBAS	6/11/97	-	1.6	7	0.9	10.95	11.15	7.1	28.7	0.02	99.4	-	396
Chatcolet Shallow	2397	DBAS	6/11/97	-	1.6	6	0.9	10.93	11.31	7.11	28.5	0.02	99.6	-	396

Chatcolet Shallow	2397	DBAS	6/11/97	-	1.6	5	0.9	10.94	11.18	7.12	28.3	0.02	99.4	-	395
Chatcolet Shallow	2397	DBAS	6/11/97	-	1.6	4	0.9	10.97	11.1	7.11	28.4	0.02	99.5	-	396
Chatcolet Shallow	2397	DBAS	6/11/97	-	1.6	3	1.5	11.07	10.98	7.11	28.3	0.02	100.1	-	398
Chatcolet Shallow	2397	DBAS	6/11/97	-	1.6	2	1.5	11.12	10.89	7.11	28.4	0.02	100.4	-	398
Chatcolet Shallow	2397	DBAS	6/11/97	-	1.6	1	1.5	11.16	10.88	7.12	28.3	0.02	100.7	-	398
Chatcolet Shallow	2597	DBAC	6/26/97	-	0.7	10	0.2	11.42	11.88	7.25	31.8	0.02	105.4	-	388
Chatcolet Shallow	2597	DBAC	6/26/97	-	0.7	9	0.2	11.38	11.97	6.9	0.7	0	105.1	-	405
Chatcolet Shallow	2597	DBAC	6/26/97	-	0.7	8	0.2	11.43	11.9	7.25	31.8	0.02	105.4	-	389
Chatcolet Shallow	2597	DBAC	6/26/97	-	0.7	7	0.2	11.44	11.88	7.26	31.8	0.02	105.6	-	389
Chatcolet Shallow	2597	DBAC	6/26/97	-	0.7	6	0.2	11.44	11.92	7.26	31.8	0.02	105.5	-	389
Chatcolet Shallow	2597	DBAC	6/26/97	-	0.7	5	0.7	11.39	11.87	7.24	31.9	0.02	105	-	392
Chatcolet Shallow	2597	DBAC	6/26/97	-	0.7	4	0.7	11.41	11.85	7.27	31.8	0.02	105.2	-	391
Chatcolet Shallow	2597	DBAC	6/26/97	-	0.7	3	0.7	11.43	11.84	7.27	31.8	0.02	105.3	-	391
Chatcolet Shallow	2597	DBAC	6/26/97	-	0.7	2	0.7	11.4	11.87	7.27	31.8	0.02	105.2	-	391
Chatcolet Shallow	2597	DBAC	6/26/97	-	0.7	1	0.7	11.44	11.87	7.27	31.8	0.02	105.5	-	391
Chatcolet Shallow	2797	DBSS	7/8/97	-	0.7	2	0.2	10.12	16.22	7.28	35.2	0.02	*****	-	406
Chatcolet Shallow	2797	DBSS	7/8/97	-	0.7	1	0.8	10.17	16.19	7.29	35.2	0.02	*****	-	409
Chatcolet Shallow	2997	SSJD	7/24/97	-	0.8	10	0.3	11.24	22.77	9.09	38.9	0.02	*****	-	356
Chatcolet Shallow	2997	SSJD	7/24/97	-	0.8	9	0.3	11.33	22.93	9.1	39	0.02	*****	-	357
Chatcolet Shallow	2997	SSJD	7/24/97	-	0.8	8	0.3	11.39	23.04	9.12	39	0.03	*****	-	356
Chatcolet Shallow	2997	SSJD	7/24/97	-	0.8	7	0.3	11.5	22.99	9.1	39	0.03	*****	-	357
Chatcolet Shallow	2997	SSJD	7/24/97	-	0.8	6	0.2	11.19	22.95	9.03	39	0.02	*****	-	361
Chatcolet Shallow	2997	SSJD	7/24/97	-	0.8	5	1	11.36	20.13	8.43	38.2	0.02	*****	-	382
Chatcolet Shallow	2997	SSJD	7/24/97	-	0.8	4	1	11.45	20.09	8.47	38	0.02	*****	-	379
Chatcolet Shallow	2997	SSJD	7/24/97	-	0.8	3	1	11.51	20.11	8.49	38.1	0.02	*****	-	378
Chatcolet Shallow	2997	SSJD	7/24/97	-	0.8	2	0	11.47	20.18	8.45	38.1	0.02	*****	-	379
Chatcolet Shallow	2997	SSJD	7/24/97	-	0.8	1	1	11.55	20.09	8.47	38	0.02	*****	-	378

Location	Phase	Sampler	Date	Time	Secchi	Sequence	Depth (m)	Dissolved Oxygen (mg/l)	Temperature (C)	pH	Conductivity (µs/cm)	TDS	Percent Saturation	Statime	Redox
Chatcolet Shallow	3197	DBSS	8/5/97	-	1	2	0.3	12.26	25.72	9.28	46	0.03	148.1	-	295
Chatcolet Shallow	3197	DBSS	8/5/97	-	1	1	0.9	12.94	22.95	9.04	46.6	0.03	148.9	-	304
Chatcolet Shallow	3297	DBSS	8/14/97	-	1.1	2	0.3	11.62	24.37	9.54	53.3	0.03	138	-	279
Chatcolet Shallow	3297	DBSS	8/14/97	-	1.1	1	1.1	11.73	24.29	9.63	52.4	0.03	139.1	-	276
CHATSH	3497	DBSS	8/27/97	-	0.8	1	0.8	11.39	21.49	8.62	56.9	0.04	128.4	-	277
Chatcolet Shallow	3797	DBAS	9/16/97	-	1	1	0.8	10.41	15.56	7.79	54.3	0.03	104.2	-	256
Chatcolet Shallow	3997	ASRA	9/29/97	-	0.4	1	0.4	12.26	16.46	8.31	53.6	0.03	126.8	-	362
Chatcolet Shallow	4297	DBAS	10/20/97	-	1	2	0.3	10.98	10.61	7.11	53.4	0.03	97.6	-	372
Chatcolet Shallow	4297	DBAS	10/20/97	-	1	1	0.7	10.16	9.02	7	57.2	0.04	87	-	379
Chatcolet Shallow	4497	DBAS	11/3/97	-	0.9	2	0.2	11.72	7.28	6.97	42.6	0.03	96.2	*****	418
Chatcolet Shallow	4497	DBAS	11/3/97	-	0.9	1	0.8	11.86	7.26	6.96	43	0.03	97.3	*****	424
Benewah Lake	1597	ASSS	4/18/97	-	0.8	3	0.2	11.66	9.27	7.36	28.1	0.02	*****	-	363
Benewah Lake	1597	ASSS	4/18/97	-	0.8	2	1.6	11.46	8.92	7.32	27.9	0.02	99	-	367
Benewah Lake	1597	ASSS	4/18/97	-	0.8	1	4.3	11.42	7.02	7.36	24.8	0.02	*****	-	366
Benewah Lake	1997	DBSS	5/16/97	-	1.1	10	0.3	10.12	16.39	6.97	31.6	0.02	102.6	-	369
Benewah Lake	1997	DBSS	5/16/97	-	1.1	9	1.1	9.81	15.1	6.95	31.2	0.02	96.8	-	371
Benewah Lake	1997	DBSS	5/16/97	-	1.1	8	1.8	11.11	8.71	7	26.6	0.02	94.8	-	372
Benewah Lake	1997	DBSS	5/16/97	-	1.1	7	2.5	11.1	8.53	7.02	26.6	0.02	94.1	-	372
Benewah Lake	1997	DBSS	5/16/97	-	1.1	6	3.3	11.07	8.4	7.01	26.5	0.02	93.6	-	372
Benewah Lake	1997	DBSS	5/16/97	-	1.1	5	3.9	11.04	8.38	7.01	26.7	0.02	93.3	-	372
Benewah Lake	1997	DBSS	5/16/97	-	1.1	4	4.7	11	8.36	7.02	26.7	0.02	92.9	-	372
Benewah Lake	1997	DBSS	5/16/97	-	1.1	3	5.6	10.94	8.36	7.03	27	0.02	92.5	-	371

Benewah Lake	1997	DBSS	5/16/97	-	1.1	2	6.2	10.8	8.35	7.02	27.2	0.02	91	-	371
Benewah Lake	1997	DBSS	5/16/97	-	1.1	1	7	10.47	8.25	7.04	27.7	0.02	88.2	-	371
Benewah Lake	2197	DBSS	5/29/97	-	2	12	0.8	10.09	13.9	6.97	28	0.02	97.1	-	351
Benewah Lake	2197	DBSS	5/29/97	-	2	11	0.8	10.05	13.88	6.97	27.6	0.02	96.7	-	350
Benewah Lake	2197	DBSS	5/29/97	-	2	10	1.8	10.85	9.35	6.97	27	0.02	94.1	-	351
Benewah Lake	2197	DBSS	5/29/97	-	2	9	1.8	11.02	9.17	6.96	27	0.02	95.1	-	351
Benewah Lake	2197	DBSS	5/29/97	-	2	8	2.8	11.1	8.71	6.94	26.7	0.02	94.8	-	351
Benewah Lake	2197	DBSS	5/29/97	-	2	7	2.8	11.08	8.65	6.96	26.7	0.02	94.4	-	350
Benewah Lake	2197	DBSS	5/29/97	-	2	6	3.9	10.82	8.37	6.92	26.8	0.02	91.6	-	350
Benewah Lake	2197	DBSS	5/29/97	-	2	5	3.9	10.83	8.35	6.93	26.6	0.02	91.6	-	349
Benewah Lake	2197	DBSS	5/29/97	-	2	4	4.9	10.54	7.89	6.92	26.5	0.02	88.2	-	346
Benewah Lake	2197	DBSS	5/29/97	-	2	3	4.9	10.59	7.89	6.92	26.7	0.02	88.6	-	347
Benewah Lake	2197	DBSS	5/29/97	-	2	2	5.9	10.3	7.66	6.92	26.6	0.02	85.7	-	352
Benewah Lake	2197	DBSS	5/29/97	-	2	1	5.9	10.35	7.65	6.92	26.5	0.02	86.1	-	350
Benewah Lake	2397	DBAS	6/11/97	-	2.5	10	0.4	9.39	17.73	6.99	32.6	0.02	98.5	-	399
Benewah Lake	2397	DBAS	6/11/97	-	2.5	9	0.4	9.43	17.83	7	32.5	0.02	99.1	-	399
Benewah Lake	2397	DBAS	6/11/97	-	2.5	8	0.3	9.43	17.9	7	32.4	0.02	99.2	-	399
Benewah Lake	2397	DBAS	6/11/97	-	2.5	7	0.9	9.82	15.89	7.01	32.7	0.02	99.1	-	399
Benewah Lake	2397	DBAS	6/11/97	-	2.5	6	1.9	10.25	14.21	7	30.3	0.02	99.8	-	400
Benewah Lake	2397	DBAS	6/11/97	-	2.5	5	2.8	11.19	11.04	6.95	28.6	0.02	101.4	-	402
Benewah Lake	2397	DBAS	6/11/97	-	2.5	4	3.9	9.41	8.78	6.86	28.8	0.02	80.9	-	407
Benewah Lake	2397	DBAS	6/11/97	-	2.5	3	4.8	8.36	8.6	6.85	30.2	0.02	71.5	-	407
Benewah Lake	2397	DBAS	6/11/97	-	2.5	2	4.8	8.38	8.6	6.86	29.9	0.02	71.6	-	407
Benewah Lake	2397	DBAS	6/11/97	-	2.5	1	4.8	8.41	8.56	6.87	29.7	0.02	71.8	-	406
Benewah Lake	2597	DBSS	6/26/97	-	3.1	12	0.3	10.31	18.63	7.36	33.9	0.02	110	-	384
Benewah Lake	2597	DBSS	6/26/97	-	3.1	11	0.3	10.3	18.65	7.36	33.9	0.02	110	-	383
Benewah Lake	2597	DBSS	6/26/97	-	3.1	10	0.9	10.32	18.57	7.34	33.9	0.02	110	-	384
Benewah Lake	2597	DBSS	6/26/97	-	3.1	9	0.9	10.31	18.59	7.32	33.9	0.02	109.9	-	384

Benewah Lake	2597	DBSS	6/26/97	-	3.1	8	1.9	10.39	17.97	7.22	34	0.02	109.4	-	386
Benewah Lake	2597	DBSS	6/26/97	-	3.1	7	1.9	10.33	18.02	7.21	33.8	0.02	108.9	-	386
Benewah Lake	2597	DBSS	6/26/97	-	3.1	6	2.8	11.07	13.35	7.02	31.1	0.02	105.6	-	391
Benewah Lake	2597	DBSS	6/26/97	-	3.1	5	2.8	11.04	13.35	7	30.9	0.02	105.3	-	391
Benewah Lake	2597	DBSS	6/26/97	-	3.1	4	3.7	8.49	10.92	6.78	30.5	0.02	76.6	-	398
Benewah Lake	2597	DBSS	6/26/97	-	3.1	3	3.7	8.43	10.9	6.78	30.3	0.02	76	-	398
Benewah Lake	2597	DBSS	6/26/97	-	3.1	2	4.7	5.4	9.84	6.77	33.7	0.02	47.5	-	398
Benewah Lake	2597	DBSS	6/26/97	-	3.1	1	4.7	5.43	9.84	6.78	33.7	0.02	47.7	-	398
Benewah Lake	2797	DBSS	7/8/97	-	2.3	6	0.3	10.59	21.76	8.31	35.9	0.02	*****	-	370
Benewah Lake	2797	DBSS	7/8/97	-	2.3	5	0.8	10.62	21.56	7.85	36	0.02	*****	-	377
Benewah Lake	2797	DBSS	7/8/97	-	2.3	4	1.8	11.49	17.39	7.29	35.3	0.02	*****	-	398
Benewah Lake	2797	DBSS	7/8/97	-	2.3	3	2.7	11.51	14.86	7.09	33.8	0.02	*****	-	408
Benewah Lake	2797	DBSS	7/8/97	-	2.3	2	3.6	9.61	13.13	6.92	33.1	0.02	90.9	-	417
Benewah Lake	2797	DBSS	7/8/97	-	2.3	1	4.6	5.87	11.66	6.9	36	0.02	53.6	-	421
Benewah Lake	2997	SSJD	7/24/97	-	3	10	0.4	10.59	23.51	9.06	37.8	0.02	*****	-	356
Benewah Lake	2997	SSJD	7/24/97	-	3	9	0	10.66	23.29	9.02	37.8	0.02	*****	-	358
Benewah Lake	2997	SSJD	7/24/97	-	3	8	1	10.58	23.37	9.03	37.8	0.02	*****	-	358
Benewah Lake	2997	SSJD	7/24/97	-	3	7	1.9	10.62	23.2	8.9	37.5	0.02	*****	-	361
Benewah Lake	2997	SSJD	7/24/97	-	3	6	2	10.67	23.01	8.72	37.6	0.02	*****	-	366
Benewah Lake	2997	SSJD	7/24/97	-	3	5	3	11.46	18.22	7.41	34	0.02	*****	-	407
Benewah Lake	2997	SSJD	7/24/97	-	3	4	3	11.38	18.08	7.31	33.6	0.02	*****	-	409
Benewah Lake	2997	SSJD	7/24/97	-	3	3	4	10.54	15.01	7.05	33	0.02	*****	-	421
Benewah Lake	2997	SSJD	7/24/97	-	3	2	4	9.11	14.54	6.99	34.9	0.02	88.9	-	426
Benewah Lake	2997	SSJD	7/24/97	-	3	1	4.8	5.06	13.37	6.97	40.5	0.03	48.2	-	437
Benewah Lake	3197	DBSS	8/5/97	-	2.7	5	0.3	11.3	26.45	9.38	42.4	0.03	138.4	-	259
Benewah Lake	3197	DBSS	8/5/97	-	2.7	4	1.6	11.69	24.11	9.41	42.5	0.03	137.3	-	256
Benewah Lake	3197	DBSS	8/5/97	-	2.7	3	2.8	10.7	22.54	8.41	39.8	0.03	122	-	276
Benewah Lake	3197	DBSS	8/5/97	-	2.7	2	3.6	10.2	20.44	7.28	37.3	0.02	111.7	-	309

Benewah Lake	3197	DBSS	8/5/97	-	2.7	1	4.7	2.78	15.59	7.06	47.9	0.03	27.2	-	337
Benewah Lake	3297	DBSS	8/14/97	-	4.3	9	0.4	8.91	23.87	8.9	42	0.03	104.8	-	260
Benewah Lake	3297	DBSS	8/14/97	-	4.3	8	0.9	8.91	23.86	8.9	42	0.03	104.8	-	256
Benewah Lake	3297	DBSS	8/14/97	-	4.3	7	1.4	8.89	23.86	8.91	42	0.03	104.6	-	251
Benewah Lake	3297	DBSS	8/14/97	-	4.3	6	1.9	8.89	23.76	8.83	42.1	0.03	104.4	-	250
Benewah Lake	3297	DBSS	8/14/97	-	4.3	5	2.3	8.88	23.75	8.74	42	0.03	104.3	-	248
Benewah Lake	3297	DBSS	8/14/97	-	4.3	4	2.9	7.94	22.77	8.28	41.6	0.03	91.6	-	254
Benewah Lake	3297	DBSS	8/14/97	-	4.3	3	3.4	8.65	20.97	7.3	41.2	0.03	96.3	-	277
Benewah Lake	3297	DBSS	8/14/97	-	4.3	2	3.9	8.53	20.2	7.12	41.6	0.03	93.4	-	277
Benewah Lake	3297	DBSS	8/14/97	-	4.3	1	4.4	2.15	18.22	6.93	49.6	0.03	22.7	-	293
Benewah Lake	3497	DBSS	8/27/97	-	3.8	10	0.3	9.39	22.33	8.27	46.4	0.03	107.6	-	271
Benewah Lake	3497	DBSS	8/27/97	-	3.8	9	0.8	9.41	22.18	8.36	46.5	0.03	107.5	-	264
Benewah Lake	3497	DBSS	8/27/97	-	3.8	8	1.3	9.42	22.08	8.35	46.6	0.03	107.3	-	263
Benewah Lake	3497	DBSS	8/27/97	-	3.8	7	1.8	9.46	21.85	8.37	46.6	0.03	107.3	-	260
Benewah Lake	3497	DBSS	8/27/97	-	3.8	6	2.3	9.64	21.58	8.49	46.6	0.03	108.8	-	253
Benewah Lake	3497	DBSS	8/27/97	-	3.8	5	2.8	9.6	21.49	8.45	46.6	0.03	108.1	-	250
Benewah Lake	3497	DBSS	8/27/97	-	3.8	4	3.3	9.59	21.44	8.39	46.7	0.03	108	-	248
Benewah Lake	3497	DBSS	8/27/97	-	3.8	3	3.7	9.2	21.32	8.03	46.6	0.03	103.3	-	248
Benewah Lake	3497	DBSS	8/27/97	-	3.8	2	4.3	3.62	19.73	6.74	54.2	0.03	39.4	-	292
Benewah Lake	3497	DBSS	8/27/97	-	3.8	1	4.8	1.44	18.97	6.69	57.1	0.04	15.5	-	280
Benewah Lake	3797	DBAS	9/16/97	-	1.5	10	0.2	8.58	17.07	7.22	46.1	0.03	88.5	-	308
Benewah Lake	3797	DBAS	9/16/97	-	1.5	9	0.5	8.57	17.07	7.22	46	0.03	88.6	-	308
Benewah Lake	3797	DBAS	9/16/97	-	1.5	8	1	8.56	17.05	7.22	46.1	0.03	88.4	-	307
Benewah Lake	3797	DBAS	9/16/97	-	1.5	7	1.5	8.53	17.07	7.23	46	0.03	88.3	-	306
Benewah Lake	3797	DBAS	9/16/97	-	1.5	6	2	8.57	17.07	7.23	46	0.03	88.6	-	304
Benewah Lake	3797	DBAS	9/16/97	-	1.5	5	2.5	8.64	17.05	7.23	46.1	0.03	89.3	-	302
Benewah Lake	3797	DBAS	9/16/97	-	1.5	4	3	8.7	17.05	7.23	46	0.03	90	-	300
Benewah Lake	3797	DBAS	9/16/97	-	1.5	3	3.5	8.73	17.03	7.23	46.1	0.03	90.2	-	297

Benewah Lake	3797	DBAS	9/16/97	-	1.5	2	4	8.71	17.03	7.24	46	0.03	90	-	296
Benewah Lake	3797	DBAS	9/16/97	-	1.5	1	4.5	8.73	17.03	7.23	46	0.03	90.2	-	300
Benewah Lake	3997	ASRA	9/29/97	-	2.2	8	0.3	9.77	16.41	7.41	45.9	0.03	100.9	-	382
Benewah Lake	3997	ASRA	9/29/97	-	2.2	7	1	9.9	15.76	7.41	46	0.03	100.8	-	382
Benewah Lake	3997	ASRA	9/29/97	-	2.2	6	1.5	9.87	15.4	7.39	45.8	0.03	99.8	-	383
Benewah Lake	3997	ASRA	9/29/97	-	2.2	5	2	9.78	15.3	7.37	45.8	0.03	98.7	-	383
Benewah Lake	3997	ASRA	9/29/97	-	2.2	4	2.5	9.49	15.19	7.33	45.8	0.03	95.5	-	385
Benewah Lake	3997	ASRA	9/29/97	-	2.2	3	3	9.42	15.1	7.32	45.8	0.03	94.6	-	384
Benewah Lake	3997	ASRA	9/29/97	-	2.2	2	3.5	9.16	15.04	7.3	45.8	0.03	91.9	-	385
Benewah Lake	3997	ASRA	9/29/97	-	2.2	1	4	9.09	15.04	7.31	45.9	0.03	91.2	-	384
Benewah Lake	4297	DBAS	10/20/97	-	2.2	9	0.3	10.61	10.45	7.15	49.1	0.03	94	-	369
Benewah Lake	4297	DBAS	10/20/97	-	2.2	8	0.6	10.61	10.48	7.12	49.3	0.03	94	-	372
Benewah Lake	4297	DBAS	10/20/97	-	2.2	7	1.1	10.63	10.48	7.11	49.3	0.03	94.2	-	372
Benewah Lake	4297	DBAS	10/20/97	-	2.2	6	1.6	10.63	10.43	7.11	49.4	0.03	94.1	-	372
Benewah Lake	4297	DBAS	10/20/97	-	2.2	5	2.1	10.6	10.45	7.08	49.3	0.03	93.8	-	372
Benewah Lake	4297	DBAS	10/20/97	-	2.2	4	2.6	10.55	10.41	7.04	49.3	0.03	93.3	-	373
Benewah Lake	4297	DBAS	10/20/97	-	2.2	3	3.1	10.17	10.41	7.02	49.5	0.03	90	-	373
Benewah Lake	4297	DBAS	10/20/97	-	2.2	2	3.6	9.84	10.4	6.97	49.8	0.03	87	-	375
Benewah Lake	4297	DBAS	10/20/97	-	2.2	1	4.1	9.71	10.38	6.86	49.8	0.03	85.8	-	378

Location	Phase	Sampler	Date	Time	Secchi	Sequence	Depth (m)	Dissolved Oxygen (mg/l)	Temperature (C)	pH	Conductivity (µs/cm)	TDS	Percent Saturation	Statime	Redox
ST.JOE	1597	AS SS	4/18/97	-	1.1	2	0.2	12.89		7.41	32.4	0.02	102.6	-	-
ST.JOE	1597	AS SS	4/18/97	-	1.1	1	5	13.21	5.54	7.41	32.3	0.02	*****	-	356
ST.JOE	1997	DB SS	5/16/97	-	0.4	12	0.2	11.4	8.54	6.99	25.9	0.02	96.7	-	356
ST.JOE	1997	DB SS	5/16/97	-	0.4	11	1	11.41	8.46	6.96	25.9	0.02	96.6	-	364
ST.JOE	1997	DB SS	5/16/97	-	0.4	10	1.9	11.44	8.36	6.97	25.9	0.02	96.6	-	365

ST.JOE	1997	DB SS	5/16/97	-	0.4	9	3	11.44	8.36	6.96	25.9	0.02	96.4	-	365
ST.JOE	1997	DB SS	5/16/97	-	0.4	8	4.1	11.44	8.36	6.96	25.9	0.02	96.5	-	366
ST.JOE	1997	DB SS	5/16/97	-	0.4	7	5	11.44	8.35	6.95	25.9	0.02	96.6	-	367
ST.JOE	1997	DB SS	5/16/97	-	0.4	6	6	11.46	8.35	6.96	26	0.02	96.7	-	367
ST.JOE	1997	DB SS	5/16/97	-	0.4	5	6.9	11.43	8.38	6.96	25.9	0.02	96.5	-	368
ST.JOE	1997	DB SS	5/16/97	-	0.4	4	8	11.43	8.38	6.96	26	0.02	96.6	-	369
ST.JOE	1997	DB SS	5/16/97	-	0.4	3	9.2	11.39	8.4	6.97	26	0.02	96.3	-	369
ST.JOE	1997	DB SS	5/16/97	-	0.4	2	10	11.44	8.4	6.99	25.9	0.02	96.7	-	371
ST.JOE	1997	DB SS	5/16/97	-	0.4	1	11.2	11.45	8.4	6.99	25.9	0.02	96.8	-	373
ST.JOE	2197	DBSS	5/29/97	-	1.1	10	0.3	11.53	8.97	7.08	26.3	0.02	99.1	-	363
ST.JOE	2197	DBSS	5/29/97	-	1.1	9	0.3	11.53	8.99	7.09	26.4	0.02	99.1	-	362
ST.JOE	2197	DBSS	5/29/97	-	1.1	8	0.3	11.51	8.99	7.08	26.6	0.02	98.9	-	363
ST.JOE	2197	DBSS	5/29/97	-	1.1	7	0.3	11.53	8.97	7.09	26.1	0.02	99.1	-	363
ST.JOE	2197	DBSS	5/29/97	-	1.1	6	0.3	11.53	8.99	7.09	26.4	0.02	99.1	-	363
ST.JOE	2197	DBSS	5/29/97	-	1.1	5	9.1	11.53	8.97	7.06	26.5	0.02	98.7	-	366
ST.JOE	2197	DBSS	5/29/97	-	1.1	4	10	11.51	8.97	7.06	26.5	0.02	98.9	-	366
ST.JOE	2197	DBSS	5/29/97	-	1.1	3	10.1	11.51	8.99	7.07	26.7	0.02	98.8	-	366
ST.JOE	2197	DBSS	5/29/97	-	1.1	2	10.5	11.5	8.97	7.06	26.4	0.02	98.9	-	366
ST.JOE	2197	DBSS	5/29/97	-	1.1	1	10.6	11.49	8.97	7.06	26.6	0.02	99.1	-	366
ST.JOE	2397	DBAS	6/11/97	-	1.7	10	0.8	11.35	10.28	7.13	28.1	0.02	100.9	-	394
ST.JOE	2397	DBAS	6/11/97	-	1.7	9	0.8	11.33	10.3	7.13	28.1	0.02	100.9	-	394
ST.JOE	2397	DBAS	6/11/97	-	1.7	8	0.9	11.33	10.3	7.13	28.1	0.02	100.9	-	394
ST.JOE	2397	DBAS	6/11/97	-	1.7	7	0.9	11.33	10.3	7.13	28.1	0.02	100.9	-	394
ST.JOE	2397	DBAS	6/11/97	-	1.7	6	0.8	11.35	10.3	7.12	28.1	0.02	101	-	395
ST.JOE	2397	DBAS	6/11/97	-	1.7	5	0.9	11.35	10.3	7.13	28.1	0.02	101	-	395
ST.JOE	2397	DBAS	6/11/97	-	1.7	4	0.9	11.36	10.3	7.13	28.1	0.02	101.1	-	395
ST.JOE	2397	DBAS	6/11/97	-	1.7	3	0.9	11.37	10.28	7.13	28.1	0.02	101.1	-	395
ST.JOE	2397	DBAS	6/11/97	-	1.7	2	1.1	11.37	10.28	7.14	28.1	0.02	101.2	-	395
ST.JOE	2397	DBAS	6/11/97	-	1.7	1	0.9	11.38	10.3	7.11	28	0.02	101.3	-	398

ST.JOE	2597	DBSS	6/26/97	-	3.1	11	0.2	11.21	10.68	7.18	32.1	0.02	100.6	-	399
ST.JOE	2597	DBSS	6/26/97	-	3.1	10	1	11.17	10.66	7.17	32.1	0.02	100.1	-	400
ST.JOE	2597	DBSS	6/26/97	-	3.1	9	1.9	11.2	10.64	7.17	32.1	0.02	100.4	-	402
ST.JOE	2597	DBSS	6/26/97	-	3.1	8	2.9	11.17	10.64	7.17	32.1	0.02	100.2	-	402
ST.JOE	2597	DBSS	6/26/97	-	3.1	7	4	11.19	10.64	7.17	32	0.02	100.3	-	402
ST.JOE	2597	DBSS	6/26/97	-	3.1	6	4.9	11.17	10.64	7.17	32.1	0.02	100.2	-	402
ST.JOE	2597	DBSS	6/26/97	-	3.1	5	6.1	11.19	10.64	7.17	32	0.02	100.3	-	402
ST.JOE	2597	DBSS	6/26/97	-	3.1	4	7.1	11.18	10.61	7.18	32	0.02	100.1	-	401
ST.JOE	2597	DBSS	6/26/97	-	3.1	3	8.1	11.18	10.62	7.17	32.1	0.02	100	-	401
ST.JOE	2597	DBSS	6/26/97	-	3.1	2	9	11.18	10.62	7.18	32	0.02	100.2	-	400
ST.JOE	2597	DBSS	6/26/97	-	3.1	1	11.2	11.2	10.67	7.19	32	0.02	100.4	-	400
ST.JOE	2797	DBSS	7/8/97	-	2.5	13	0.4	9.9	15.06	7.14	34.6	0.02	97.6	-	414
ST.JOE	2797	DBSS	7/8/97	-	2.5	12	1.3	9.89	15.04	7.16	34.6	0.02	97.5	-	414
ST.JOE	2797	DBSS	7/8/97	-	2.5	11	2.4	9.9	15.07	7.15	34.6	0.02	97.6	-	415
ST.JOE	2797	DBSS	7/8/97	-	2.5	10	3.5	9.92	15.02	7.15	34.6	0.02	97.7	-	415
ST.JOE	2797	DBSS	7/8/97	-	2.5	9	4.4	9.9	15.09	7.15	34.6	0.02	97.8	-	415
ST.JOE	2797	DBSS	7/8/97	-	2.5	8	5.4	9.9	15.06	7.15	34.6	0.02	97.7	-	416
ST.JOE	2797	DBSS	7/8/97	-	2.5	7	6.4	9.89	15.02	7.15	34.6	0.02	97.5	-	416
ST.JOE	2797	DBSS	7/8/97	-	2.5	6	7.4	9.88	15.02	7.16	34.6	0.02	97.4	-	416
ST.JOE	2797	DBSS	7/8/97	-	2.5	5	8.3	9.9	15.02	7.16	34.6	0.02	97.6	-	416
ST.JOE	2797	DBSS	7/8/97	-	2.5	4	9.4	9.89	15.06	7.16	34.6	0.02	97.5	-	416
ST.JOE	2797	DBSS	7/8/97	-	2.5	3	10.4	9.91	15.06	7.18	34.6	0.02	97.7	-	416
ST.JOE	2797	DBSS	7/8/97	-	2.5	2	11.4	9.93	15.06	7.19	34.6	0.02	98	-	416
ST.JOE	2797	DBSS	7/8/97	-	2.5	1	12.3	10.07	15.07	7.22	34.6	0.02	99.3	-	416
ST.JOE	2997	SSJD	7/24/97	-	3	11	0.3	9.37	18.94	7.2	38.3	0.02	*****	-	430
ST.JOE	2997	SSJD	7/24/97	-	3	10	1.3	9.42	18.47	7.2	38.2	0.02	99.9	-	431
ST.JOE	2997	SSJD	7/24/97	-	3	9	2.3	9.4	18.22	7.21	38.1	0.02	99.2	-	432
ST.JOE	2997	SSJD	7/24/97	-	3	8	3.3	9.42	18.15	7.21	38.2	0.02	99.2	-	432

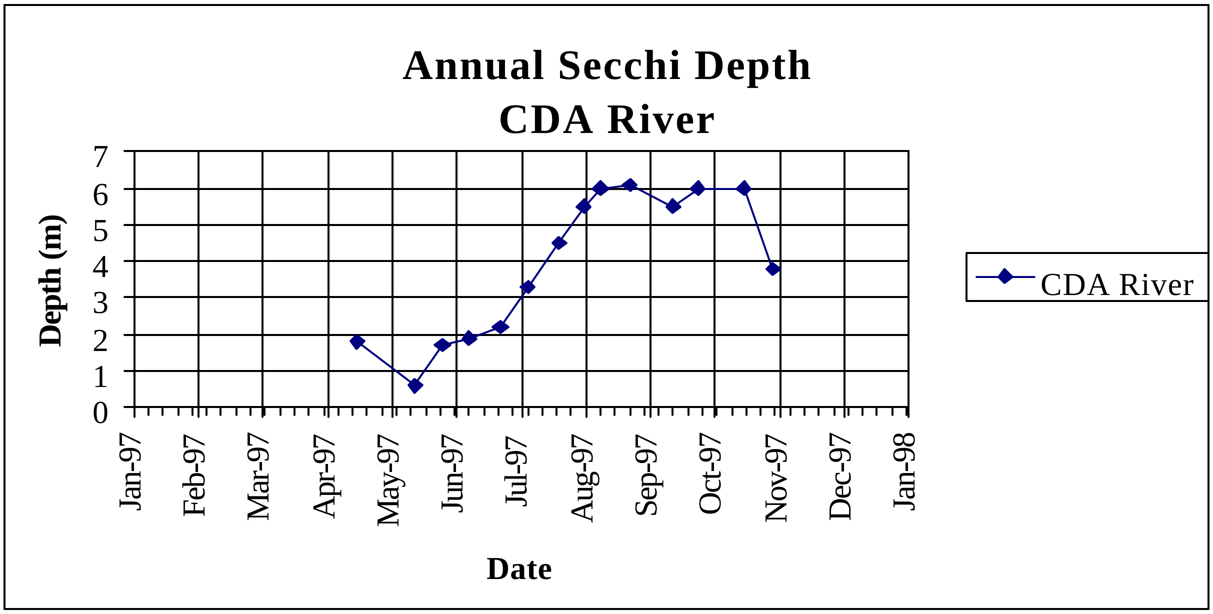
ST.JOE	2997	SSJD	7/24/97	-	3	7	4.3	9.43	18.22	7.21	38.2	0.02	99.5	-	433
ST.JOE	2997	SSJD	7/24/97	-	3	6	5.3	9.41	18.22	7.2	38.1	0.02	99.3	-	434
ST.JOE	2997	SSJD	7/24/97	-	3	5	6.3	9.4	18.1	7.21	38.1	0.02	99	-	433
ST.JOE	2997	SSJD	7/24/97	-	3	4	7.3	9.41	18.22	7.21	38.1	0.02	99.3	-	434
ST.JOE	2997	SSJD	7/24/97	-	3	3	8.3	9.4	18.18	7.22	38.1	0.02	99.1	-	434
ST.JOE	2997	SSJD	7/24/97	-	3	2	9.3	9.43	18.1	7.25	38.1	0.02	99.3	-	434
ST.JOE	2997	SSJD	7/24/97	-	3	1	10.3	9.47	18.08	7.29	38.1	0.02	99.7	-	434
ST.JOE	3197	DBSS	8/5/97	-	3	13	0.3	9.07	23.01	7.3	44.8	0.03	104.4	-	351
ST.JOE	3197	DBSS	8/5/97	-	3	12	1.5	9.11	21.37	7.26	44.5	0.03	101.5	-	354
ST.JOE	3197	DBSS	8/5/97	-	3	11	2.4	9	21.28	7.25	44.7	0.03	100.2	-	355
ST.JOE	3197	DBSS	8/5/97	-	3	10	3.4	8.91	20.55	7.22	44.3	0.03	97.8	-	356
ST.JOE	3197	DBSS	8/5/97	-	3	9	4.5	8.64	19.94	7.19	44	0.03	93.7	-	357
ST.JOE	3197	DBSS	8/5/97	-	3	8	5.5	8.62	19.71	7.19	44.1	0.03	93.1	-	356
ST.JOE	3197	DBSS	8/5/97	-	3	7	6.5	8.54	19.57	7.19	43.7	0.03	92	-	356
ST.JOE	3197	DBSS	8/5/97	-	3	6	7.5	8.51	19.45	7.19	43.7	0.03	91.3	-	356
ST.JOE	3197	DBSS	8/5/97	-	3	5	8.5	8.46	19.33	7.19	43.8	0.03	90.6	-	356
ST.JOE	3197	DBSS	8/5/97	-	3	4	9.5	8.44	19.26	7.19	43.6	0.03	90.3	-	356
ST.JOE	3197	DBSS	8/5/97	-	3	3	10.5	8.43	19.25	7.19	43.7	0.03	90.2	-	356
ST.JOE	3197	DBSS	8/5/97	-	3	2	11.5	8.4	19.25	7.19	43.7	0.03	89.8	-	355
ST.JOE	3197	DBSS	8/5/97	-	3	1	12.1	8.4	19.3	7.2	43.6	0.03	89.9	-	354
ST.JOE	3497	DBSS	8/27/97	-	4	14	0.2	8.47	20.77	7.23	55.6	0.04	94.3	-	317
ST.JOE	3497	DBSS	8/27/97	-	4	13	0.8	8.49	20.27	7.25	55.8	0.04	93.4	-	316
ST.JOE	3497	DBSS	8/27/97	-	4	12	1.7	8.47	20.2	7.24	55.7	0.04	93.1	-	317
ST.JOE	3497	DBSS	8/27/97	-	4	11	2.7	8.49	20.2	7.25	55.6	0.04	93.2	-	316
ST.JOE	3497	DBSS	8/27/97	-	4	10	3.7	8.49	20.2	7.24	55.7	0.04	93.3	-	316
ST.JOE	3497	DBSS	8/27/97	-	4	9	4.6	8.48	20.15	7.24	55.6	0.04	93	-	316
ST.JOE	3497	DBSS	8/27/97	-	4	8	5.6	8.46	20.09	7.24	55.6	0.04	92.9	-	316
ST.JOE	3497	DBSS	8/27/97	-	4	7	6.4	8.41	20.08	7.23	55.5	0.04	92.3	-	316
ST.JOE	3497	DBSS	8/27/97	-	4	6	7.5	8.4	20.02	7.23	55.6	0.04	92	-	316

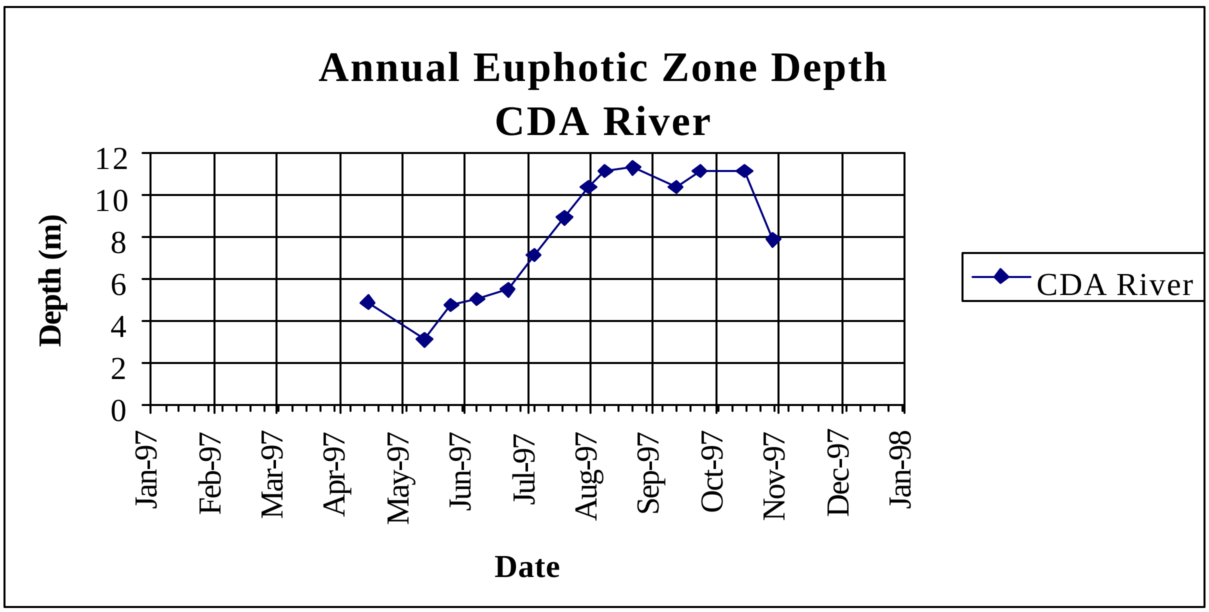
ST.JOE	3497	DBSS	8/27/97	-	4	5	8.5	8.39	20.02	7.24	55.5	0.04	91.9	-	315
ST.JOE	3497	DBSS	8/27/97	-	4	4	9.6	8.38	20.01	7.24	55.6	0.04	91.7	-	315
ST.JOE	3497	DBSS	8/27/97	-	4	3	10.4	8.38	20.01	7.25	55.5	0.04	91.7	-	314
ST.JOE	3497	DBSS	8/27/97	-	4	2	11.5	8.41	20.01	7.26	55.7	0.04	92	-	313
ST.JOE	3497	DBSS	8/27/97	-	4	1	12.7	8.43	20.04	7.27	55.6	0.04	92.3	-	313
ST.JOE	3797	DBAS	9/16/97	-	3.5	13	0.2	8.51	17.45	7.2	54.9	0.04	88.7	-	308
ST.JOE	3797	DBAS	9/16/97	-	3.5	12	0.9	8.48	17.51	7.21	55.2	0.04	88.5	-	307
ST.JOE	3797	DBAS	9/16/97	-	3.5	11	1.9	8.47	17.47	7.2	55.1	0.04	88.3	-	308
ST.JOE	3797	DBAS	9/16/97	-	3.5	10	2.9	8.47	17.45	7.19	55.2	0.04	88.3	-	307
ST.JOE	3797	DBAS	9/16/97	-	3.5	9	3.9	8.48	17.44	7.21	55.1	0.04	88.3	-	305
ST.JOE	3797	DBAS	9/16/97	-	3.5	8	4.9	8.49	17.43	7.2	55.1	0.04	88.5	-	305
ST.JOE	3797	DBAS	9/16/97	-	3.5	7	5.9	8.51	17.44	7.2	55.3	0.04	88.6	-	305
ST.JOE	3797	DBAS	9/16/97	-	3.5	6	6.9	8.49	17.42	7.2	55.2	0.04	88.6	-	303
ST.JOE	3797	DBAS	9/16/97	-	3.5	5	7.9	8.48	17.42	7.21	55.2	0.04	88.3	-	303
ST.JOE	3797	DBAS	9/16/97	-	3.5	4	8.9	8.51	17.42	7.21	55.3	0.04	88.6	-	302
ST.JOE	3797	DBAS	9/16/97	-	3.5	3	9.9	8.51	17.42	7.21	55.2	0.04	88.6	-	301
ST.JOE	3797	DBAS	9/16/97	-	3.5	2	10.9	8.53	17.44	7.22	55.2	0.04	88.8	-	300
ST.JOE	3797	DBAS	9/16/97	-	3.5	1	11.9	8.54	17.41	7.23	55.2	0.04	89	-	299
ST.JOE	3997	ASRA	9/29/97	-	2.7	11	0.2	9.83	16.29	7.24	52.9	0.03	101.3	-	397
ST.JOE	3997	ASRA	9/29/97	-	2.7	10	1.6	9.77	14.01	7.22	52.5	0.03	95.8	-	400
ST.JOE	3997	ASRA	9/29/97	-	2.7	9	2.6	9.71	13.91	7.22	52.4	0.03	95	-	400
ST.JOE	3997	ASRA	9/29/97	-	2.7	8	3.6	9.72	13.88	7.23	52.5	0.03	95.1	-	400
ST.JOE	3997	ASRA	9/29/97	-	2.7	7	4.6	9.66	13.86	7.23	52.4	0.03	94.4	-	399
ST.JOE	3997	ASRA	9/29/97	-	2.7	6	5.6	9.47	13.86	7.24	52.5	0.03	92.6	-	399
ST.JOE	3997	ASRA	9/29/97	-	2.7	5	6.6	9.44	13.86	7.25	52.3	0.03	92.3	-	399
ST.JOE	3997	ASRA	9/29/97	-	2.7	4	7.6	9.46	13.83	7.25	52.3	0.03	92.3	-	398
ST.JOE	3997	ASRA	9/29/97	-	2.7	3	8.6	9.43	13.88	7.27	52.2	0.03	92.1	-	398
ST.JOE	3997	ASRA	9/29/97	-	2.7	2	9.6	9.55	13.83	7.27	52.3	0.03	93.3	-	398
ST.JOE	3997	ASRA	9/29/97	-	2.7	1	10.6	9.5	13.83	7.29	52.3	0.03	92.7	-	397

ST.JOE	4297	DBAS	10/20/97	-	2.1	11	0.3	10.77	9.06	6.97	56.7	0.04	92.3	-	399
ST.JOE	4297	DBAS	10/20/97	-	2.1	10	1.3	10.75	9.07	6.95	56.7	0.04	92.1	-	402
ST.JOE	4297	DBAS	10/20/97	-	2.1	9	2.3	10.76	9.06	6.93	56.7	0.04	92.1	-	403
ST.JOE	4297	DBAS	10/20/97	-	2.1	8	3.3	10.76	9.06	6.91	56.7	0.04	92.1	-	404
ST.JOE	4297	DBAS	10/20/97	-	2.1	7	4.3	10.74	9.06	6.91	56.6	0.04	92	-	405
ST.JOE	4297	DBAS	10/20/97	-	2.1	6	5.3	10.76	9.06	6.88	56.6	0.04	92.1	-	406
ST.JOE	4297	DBAS	10/20/97	-	2.1	5	6.3	10.76	9.04	6.87	56.7	0.04	92.2	-	406
ST.JOE	4297	DBAS	10/20/97	-	2.1	4	7.3	10.78	9.02	6.85	56.6	0.04	92.3	-	407
ST.JOE	4297	DBAS	10/20/97	-	2.1	3	8.3	10.78	9.04	6.83	56.6	0.04	92.3	-	408
ST.JOE	4297	DBAS	10/20/97	-	2.1	2	9.3	10.8	9.02	6.81	56.5	0.04	92.4	-	408
ST.JOE	4297	DBAS	10/20/97	-	2.1	1	10.3	10.83	9.04	6.76	56.7	0.04	92.8	-	411
ST.JOE	4497	DB AS	11/3/97	-	1	11	0.4	11.9	7.03	6.63	39.7	0.03	96.8	*****	436
ST.JOE	4497	DB AS	11/3/97	-	1	10	1.8	11.93	7.02	6.61	39.9	0.03	96.9	*****	438
ST.JOE	4497	DB AS	11/3/97	-	1	9	2.8	11.9	7.03	6.63	39.8	0.03	96.8	*****	438
ST.JOE	4497	DB AS	11/3/97	-	1	8	3.8	11.92	7.03	6.61	39.8	0.03	96.9	*****	438
ST.JOE	4497	DB AS	11/3/97	-	1	7	4.8	11.89	7.04	6.61	39.9	0.03	96.6	*****	437
ST.JOE	4497	DB AS	11/3/97	-	1	6	5.8	11.93	7.06	6.61	39.8	0.03	96.9	*****	436
ST.JOE	4497	DB AS	11/3/97	-	1	5	6.8	11.93	7.06	6.61	39.9	0.03	96.9	*****	436
ST.JOE	4497	DB AS	11/3/97	-	1	4	7.8	11.95	7.07	6.61	40.2	0.03	97.1	*****	438
ST.JOE	4497	DB AS	11/3/97	-	1	3	8.8	11.96	7.08	6.61	39.9	0.03	97.3	*****	438
ST.JOE	4497	DB AS	11/3/97	-	1	2	9.8	12	7.08	6.61	39.9	0.03	97.6	*****	438
ST.JOE	4497	DB AS	11/3/97	-	1	1	10.7	11.99	7.09	6.63	39.9	0.03	97.5	*****	441

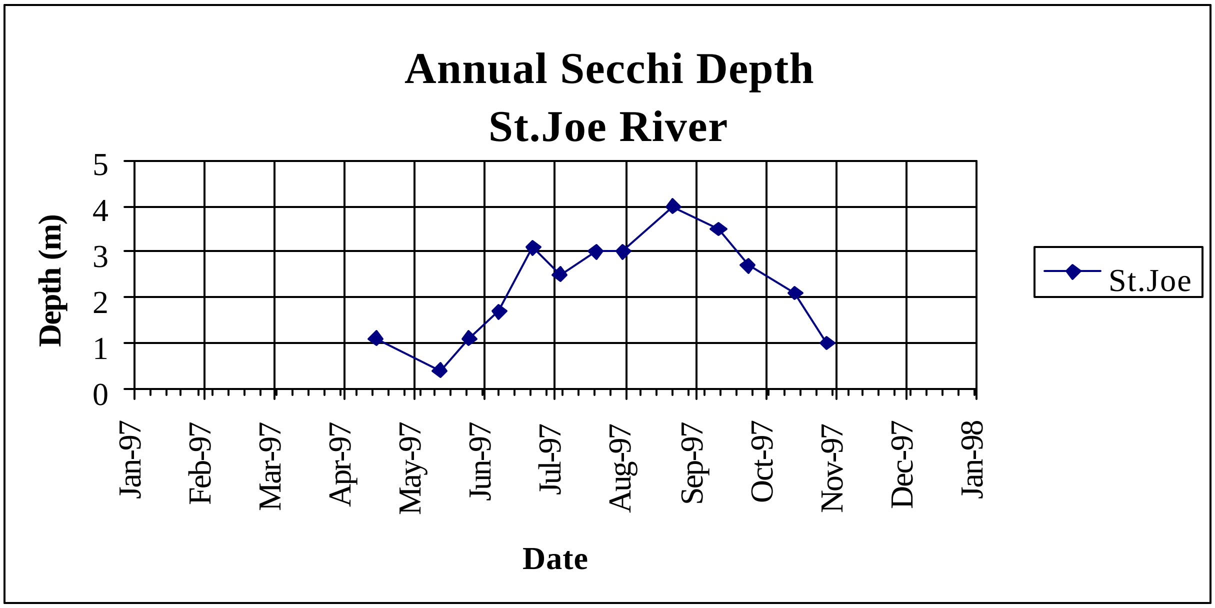
Appendix B

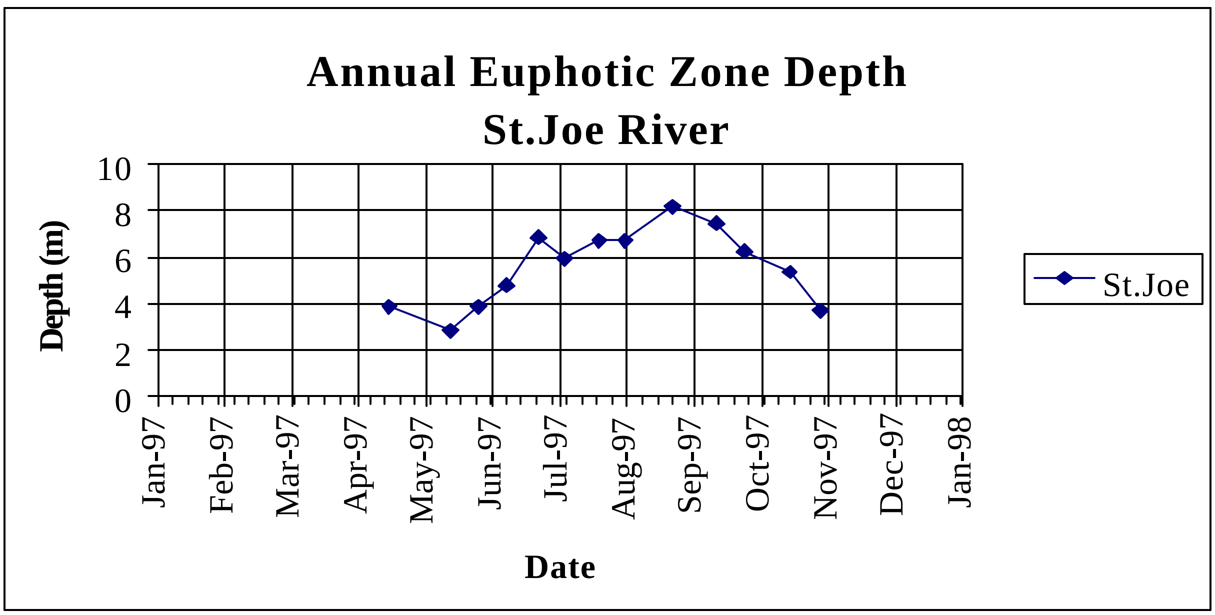
Secchi readings and empirically derived estimates of euphotic zone depth for thirteen stations in Coeur d'Alene Lake, 1997.



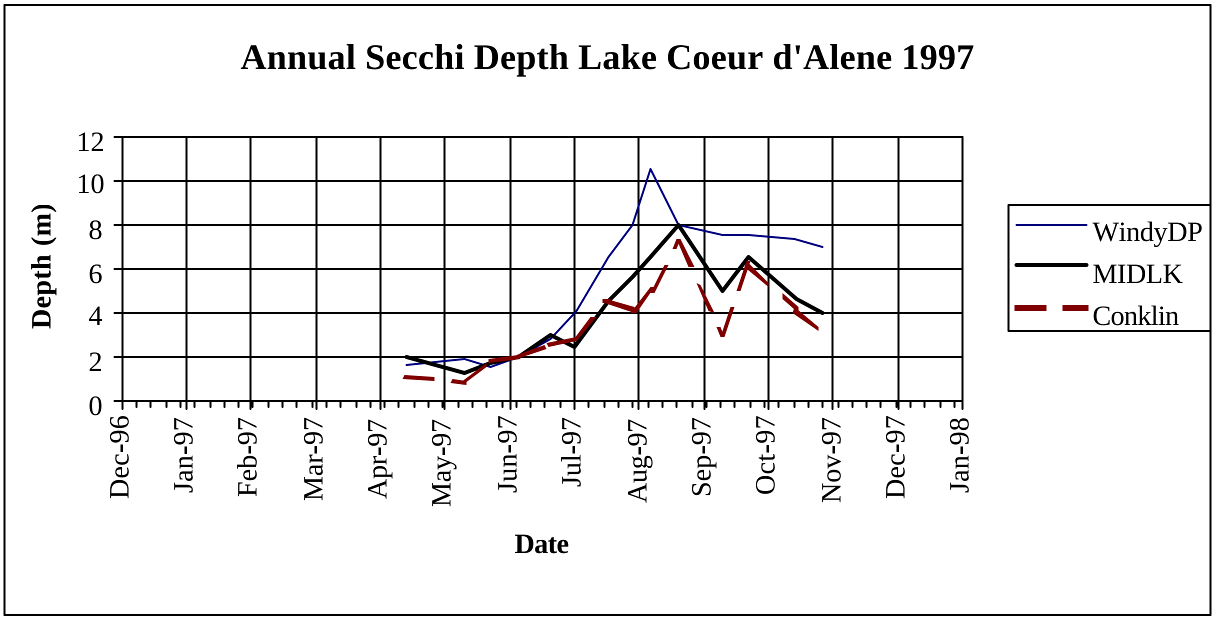


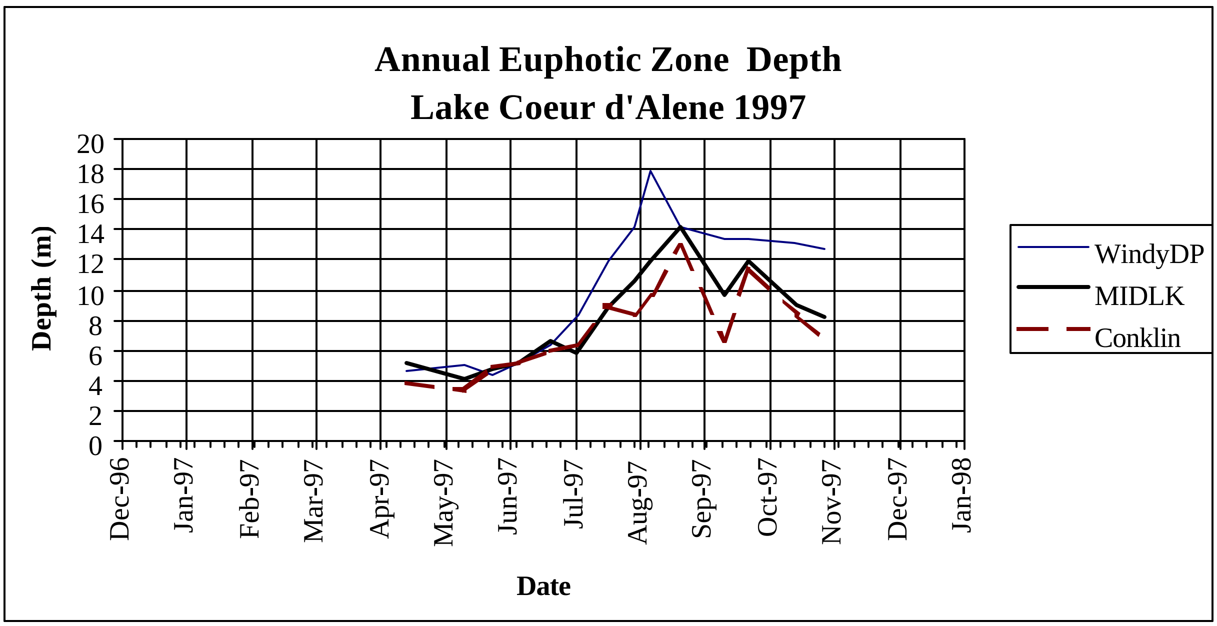
(a) Annual secchi readings (SD) for the mouth of the Coeur d'Alene River, 1997. **(b)** Empirically derived estimate of euphotic zone depth (EZD). Values are calculated using the following regression equation published by Alaska Department of Fish and Game (1987): EZD=2.2303 + 1.4914SD (r^2 = .78)



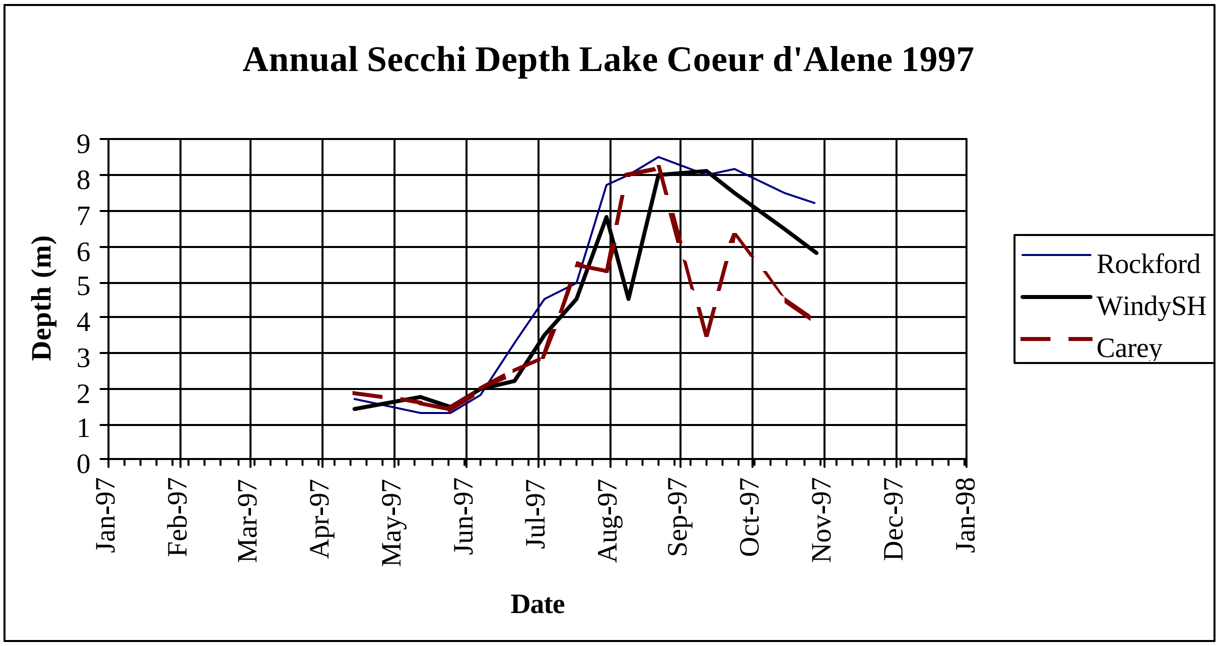


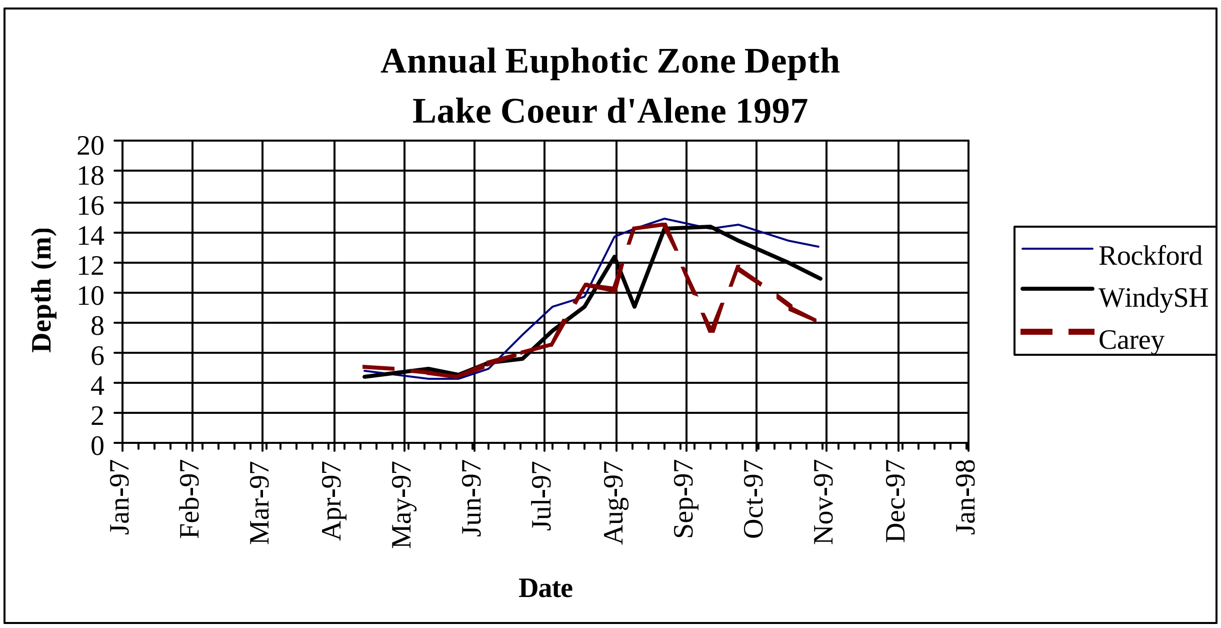
(a) Annual secchi readings (SD) for the mouth of the St. Joe River, 1997. **(b)** Empirically derived estimate of euphotic zone depth (EZD). Values are calculated using the following regression equation published by Alaska Department of Fish and Game (1987): EZD=2.2303 + 1.4914SD (r^2 = .78)



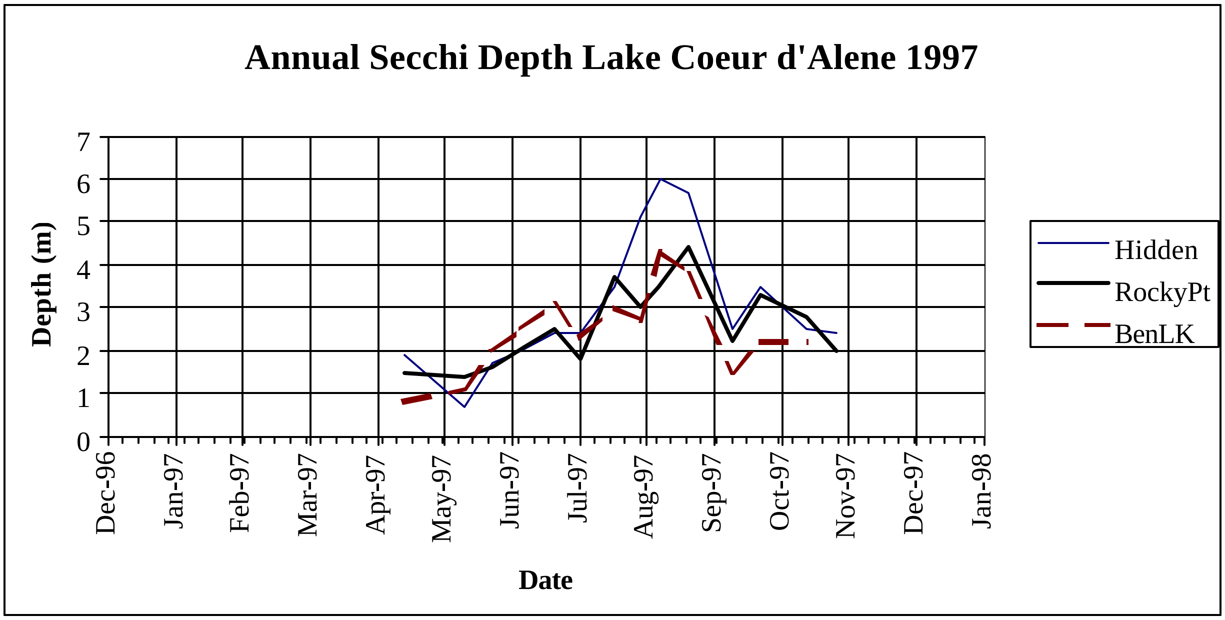


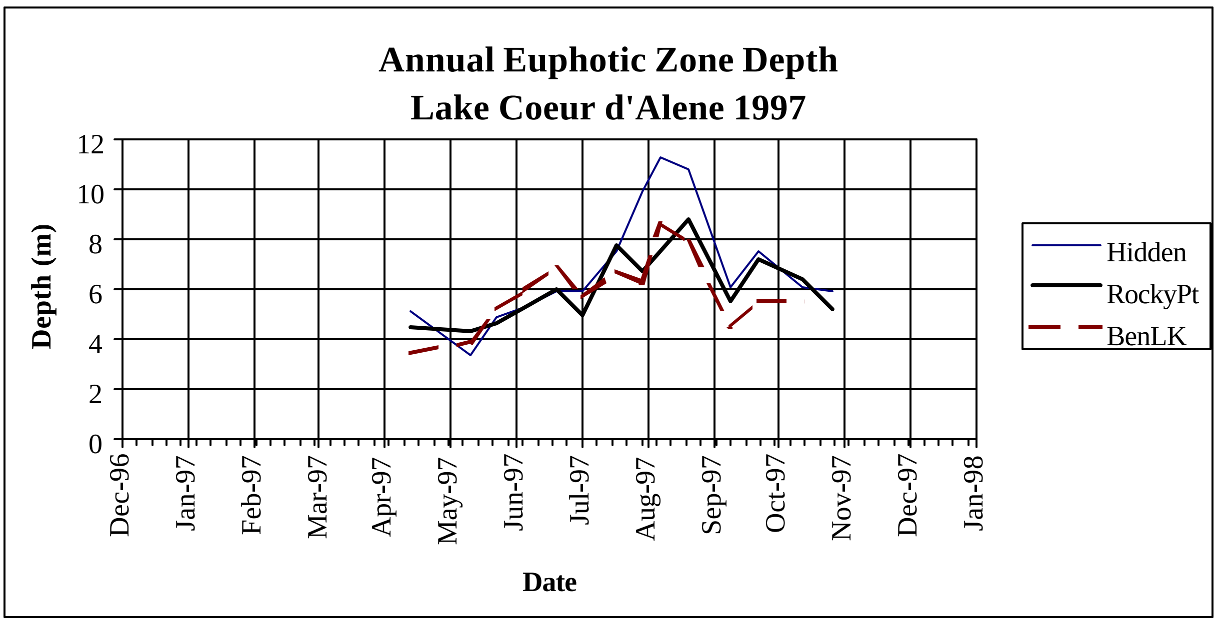
(a) Annual secchi readings (SD) for three geomorphically similar sampling locations on Coeur d'Alene Lake, 1997. **(b)** Empirically derived estimate of euphotic zone depth (EZD). Values are calculated using the following regression equation published by Alaska Department of Fish and Game (1987): EZD=2.2303 + 1.4914SD (r^2 = .78)



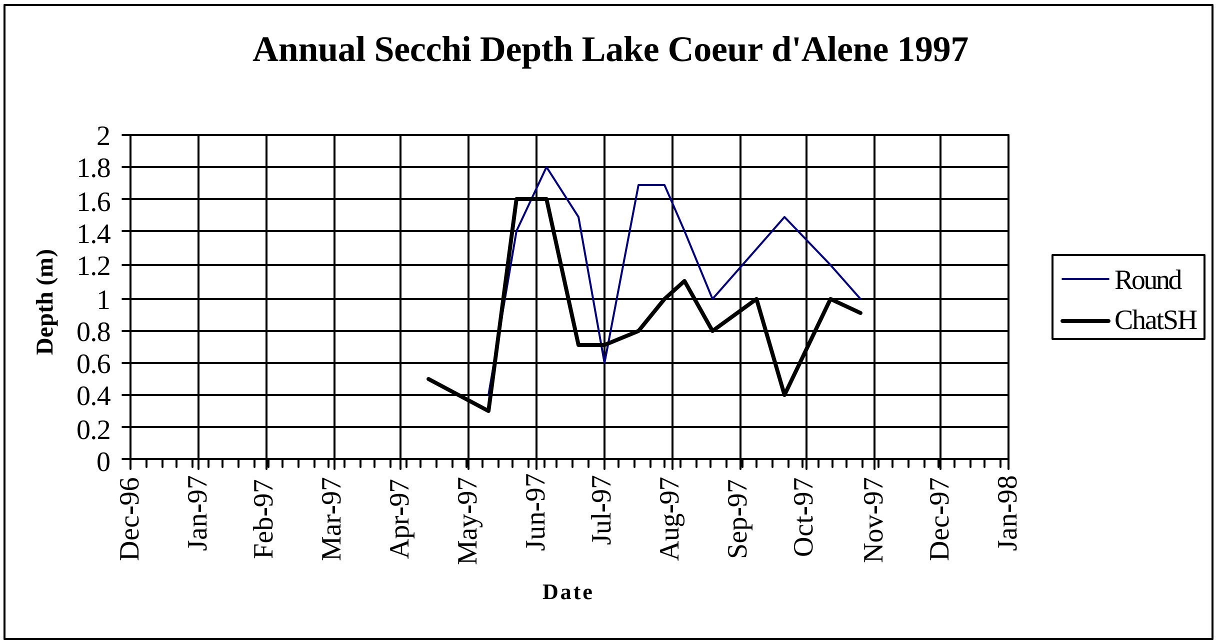


(a) Annual secchi readings (SD) for three geomorphically similar sampling locations on Coeur d'Alene Lake, 1997. **(b)** Empirically derived estimate of euphotic zone depth (EZD). Values are calculated using the following regression equation published by Alaska Department of Fish and Game (1987): EZD=2.2303 + 1.4914SD (r^2 = .78)





(a) Annual secchi readings (SD) for three geomorphically similar sampling locations on Coeur d'Alene Lake, 1997. **(b)** Empirically derived estimate of euphotic zone depth (EZD). Values are calculated using the following regression equation published by Alaska Department of Fish and Game (1987): EZD=2.2303 + 1.4914SD (r^2 = .78)



(a) Annual secchi readings (SD) for two geomorphically similar sampling locations on Coeur d'Alene Lake, 1997. Due to the shallowness of these lakes, the euphotic zone depth is encompasses the entire water column.

Appendix C
Cohort analysis of growth for cutthroat trout and brook trout, 1996-1997.

Mean back-calculated lengths at annulus formation by age class and cohort - 1996

SPECIES

Cutthroat Trout **Age Class**

LOCATION	Cohort	**Number**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
ALDER	1995	1	81	#####	#####	#####	#####	#####	#####	#####
	1994	31	84	120	#####	#####	#####	#####	#####	#####
	1993	20	81	116	147	#####	#####	#####	#####	#####
	1992	2	90	119	160	192	#####	#####	#####	#####
ALDER Total		54	83	118	148	192	#####	#####	#####	#####
BENEWAH	1996	6	#####	#####	#####	#####	#####	#####	#####	#####
	1995	28	85	#####	#####	#####	#####	#####	#####	#####
	1994	153	83	120	#####	#####	#####	#####	#####	#####
	1993	38	83	123	155	#####	#####	#####	#####	#####
	1992	7	88	131	167	206	#####	#####	#####	#####
	1991	1	78	115	152	199	236	#####	#####	#####
	1990	2	91	136	181	222	269	316	#####	#####
	1989	1	84	117	151	191	224	265	318	#####
BENEWAH Total		236	83	121	158	207	250	299	318	#####
CHERRY	1994	1	83	133	#####	#####	#####	#####	#####	#####
	1993	1	89	137	168	#####	#####	#####	#####	#####
	1990	6	87	135	177	214	256	298	#####	#####
CHERRY Total		8	86	135	176	214	256	298	#####	#####
EVANS	1996	7	#####	#####	#####	#####	#####	#####	#####	#####
	1995	35	84	#####	#####	#####	#####	#####	#####	#####
	1994	54	84	121	#####	#####	#####	#####	#####	#####
	1993	31	84	129	162	#####	#####	#####	#####	#####
	1992	6	86	131	169	207	#####	#####	#####	#####
EVANS Total		133	84	124	163	207	#####	#####	#####	#####
LAKE	1996	59	#####	#####	#####	#####	#####	#####	#####	#####
	1995	54	79	#####	#####	#####	#####	#####	#####	#####
	1994	72	86	127	#####	#####	#####	#####	#####	#####
	1993	30	85	131	161	#####	#####	#####	#####	#####
	1992	6	88	134	173	211	#####	#####	#####	#####
	1990	21	94	142	184	228	269	314	#####	#####
	1989	6	91	132	172	216	251	291	336	#####
	1988	1	88	133	170	201	246	283	328	366
LAKE Total		249	85	131	171	222	264	308	335	366
Grand Total		680	84	124	163	216	261	306	333	366

Standard deviation of mean back-calculated lengths at annulus formation - 1996

SPECIES

Cutthroat Trout **Age Class**

LOCATION	Cohort	**Number**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
ALDER	1995	1	#####	#####	#####	#####	#####	#####	#####	#####
	1994	31	3	6	#####	#####	#####	#####	#####	#####
	1993	20	4	7	9	#####	#####	#####	#####	#####
	1992	2	1	2	11	9	#####	#####	#####	#####
ALDER Total		54	4	7	10	9	#####	#####	#####	#####
BENEWAH	1996	6	#####	#####	#####	#####	#####	#####	#####	#####
	1995	28	6	#####	#####	#####	#####	#####	#####	#####
	1994	153	6	10	#####	#####	#####	#####	#####	#####
	1993	38	5	8	19	#####	#####	#####	#####	#####
	1992	7	4	6	6	7	#####	#####	#####	#####
	1991	1	#####	#####	#####	#####	#####	#####	#####	#####
	1990	2	8	10	25	32	18	4	#####	#####
	1989	1	#####	#####	#####	#####	#####	#####	#####	#####
BENEWAH Total		236	6	10	19	15	25	30	#####	#####
CHERRY	1994	1	#####	#####	#####	#####	#####	#####	#####	#####
	1993	1	#####	#####	#####	#####	#####	#####	#####	#####
	1990	6	4	7	12	15	21	22	#####	#####
CHERRY Total		8	4	6	12	15	21	22	#####	#####
EVANS	1996	7	#####	#####	#####	#####	#####	#####	#####	#####
	1995	35	6	#####	#####	#####	#####	#####	#####	#####
	1994	54	8	20	#####	#####	#####	#####	#####	#####
	1993	31	6	8	23	#####	#####	#####	#####	#####
	1992	6	5	5	5	4	#####	#####	#####	#####
EVANS Total		133	7	16	21	4	#####	#####	#####	#####
LAKE	1996	59	#####	#####	#####	#####	#####	#####	#####	#####
	1995	54	7	#####	#####	#####	#####	#####	#####	#####
	1994	72	5	9	#####	#####	#####	#####	#####	#####
	1993	30	5	9	23	#####	#####	#####	#####	#####
	1992	6	8	10	13	17	#####	#####	#####	#####
	1990	21	3	7	8	9	11	11	#####	#####
	1989	6	4	5	11	10	13	13	17	#####
	1988	1	#####	#####	#####	#####	#####	#####	#####	#####
LAKE Total		249	7	10	20	13	14	15	16	#####
Grand Total		680	6	12	20	15	17	18	16	#####

Mean back-calculated lengths at annulus formation by age class and cohort - 1996

SPECIES

Brook Trout

LOCATION	Cohort	Number	1	2	3	4	5	6	7	8
ALDER	1996	19	#####	#####	#####	#####	#####	#####	#####	#####
	1995	3	84	#####	#####	#####	#####	#####	#####	#####
	1994	28	83	116	#####	#####	#####	#####	#####	#####
	1993	34	85	121	152	#####	#####	#####	#####	#####
	1992	21	85	126	150	200	#####	#####	#####	#####
	1991	8	81	118	150	192	227	#####	#####	#####
ALDER Total		113	84	120	151	198	227	#####	#####	#####
BENEWAH	1996	4	#####	#####	#####	#####	#####	#####	#####	#####
	1995	4	76	#####	#####	#####	#####	#####	#####	#####
	1993	4	112	119	161	#####	#####	#####	#####	#####
	1992	8	83	126	162	211	#####	#####	#####	#####
	1991	6	87	134	176	220	268	#####	#####	#####
BENEWAH Total		26	88	127	166	215	268	#####	#####	#####
Grand Total		139	85	121	155	203	244	#####	#####	#####

Standard deviation of mean back-calculated lengths at annulus formation - 1996

SPECIES

Brook Trout

LOCATION	Cohort	Number	1	2	3	4	5	6	7	8
ALDER	1996	19	#####	#####	#####	#####	#####	#####	#####	#####
	1995	3	5	#####	#####	#####	#####	#####	#####	#####
	1994	28	5	9	#####	#####	#####	#####	#####	#####
	1993	34	6	7	12	#####	#####	#####	#####	#####
	1992	21	5	6	31	10	#####	#####	#####	#####
	1991	8	4	8	9	16	21	#####	#####	#####
ALDER Total		113	5	8	20	12	21	#####	#####	#####
BENEWAH	1996	4	#####	#####	#####	#####	#####	#####	#####	#####
	1995	4	1	#####	#####	#####	#####	#####	#####	#####
	1993	4	54	18	18	#####	#####	#####	#####	#####
	1992	8	4	5	12	15	#####	#####	#####	#####
	1991	6	8	13	20	16	21	#####	#####	#####
BENEWAH Total		26	24	12	17	16	21	#####	#####	#####
Grand Total		139	12	9	20	16	29	#####	#####	#####

Mean back-calculated lengths at annulus formation by age class and cohort - 1997

SPECIES ▾

Cutthroat Trout

LOCATION	Cohort	Number	Age Class 0	1	2	3	4	5	6	7	8
ALDER	1997	6	55	####	####	####	####	####	####	####	####
	1996	7	####	67	####	####	####	####	####	####	####
	1995	6	####	65	110	####	####	####	####	####	####
	1994	6	####	71	118	159	####	####	####	####	####
ALDER Total		25	55	68	114	159	####	####	####	####	####
BENEWAH	1997	5	60	####	####	####	####	####	####	####	####
	1996	7	####	69	####	####	####	####	####	####	####
	1995	20	####	67	113	####	####	####	####	####	####
	1994	9	####	80	128	183	####	####	####	####	####
	1993	6	####	74	124	177	220	####	####	####	####
	1992	1	####	72	135	189	242	295	####	####	####
	1990	1	####	73	117	179	214	258	302	337	####
	1989	1	####	68	107	154	193	224	271	302	349
BENEWAH Total		50	60	71	119	180	219	259	286	320	349
EVANS	1997	3	60	####	####	####	####	####	####	####	####
	1996	9	####	70	####	####	####	####	####	####	####
	1995	7	####	68	121	####	####	####	####	####	####
	1994	8	####	69	115	160	####	####	####	####	####
	1993	7	####	66	113	164	202	####	####	####	####
	1992	1	####	64	106	148	190	232	####	####	####
EVANS Total		35	60	68	116	161	200	232	####	####	####
LAKE	1997	5	57	####	####	####	####	####	####	####	####
	1996	5	####	68	####	####	####	####	####	####	####
	1995	22	####	65	114	####	####	####	####	####	####
	1994	14	####	62	110	151	####	####	####	####	####
	1993	3	####	67	105	155	205	####	####	####	####
	1991	1	####	63	125	176	227	268	320	####	####
	1990	2	####	67	122	167	207	248	297	338	####
LAKE Total		52	57	65	112	154	210	255	305	338	####
Grand Total		162	58	68	115	164	210	253	297	329	349

Standard deviation of mean back-calculated lengths at annulus formation - 1997

SPECIES ▾

Location	Cohort	Number	Age Class 0	1	2	3	4	5	6	7	8
ALDER	1997	6	7	####	####	####	####	####	####	####	####
	1996	7	####	17	####	####	####	####	####	####	####
	1995	6	####	6	6	####	####	####	####	####	####
	1994	6	####	10	17	26	####	####	####	####	####
ALDER Total		25	7	12	13	26	####	####	####	####	####
BENEWAH	1997	5	2	####	####	####	####	####	####	####	####
	1996	7	####	7	####	####	####	####	####	####	####
	1995	20	####	11	14	####	####	####	####	####	####
	1994	9	####	8	15	27	####	####	####	####	####
	1993	6	####	10	12	23	27	####	####	####	####
	1992	1	####	####	####	####	####	####	####	####	####
	1990	1	####	####	####	####	####	####	####	####	####
	1989	1	####	####	####	####	####	####	####	####	####
BENEWAH Total		50	2	11	15	24	25	35	22	25	####
EVANS	1997	3	14	####	####	####	####	####	####	####	####
	1996	9	####	11	####	####	####	####	####	####	####
	1995	7	####	8	9	####	####	####	####	####	####
	1994	8	####	6	7	11	####	####	####	####	####
	1993	7	####	4	4	6	6	####	####	####	####
	1992	1	####	####	####	####	####	####	####	####	####
EVANS Total		35	14	7	8	9	7	####	####	####	####
LAKE	1997	5	3	####	####	####	####	####	####	####	####
	1996	5	####	5	####	####	####	####	####	####	####
	1995	22	####	6	10	####	####	####	####	####	####
	1994	14	####	5	9	10	####	####	####	####	####
	1993	3	####	3	8	8	12	####	####	####	####
	1991	1	####	####	####	####	####	####	####	####	####
	1990	2	####	0	1	1	8	2	9	3	####
LAKE Total		52	3	6	10	11	12	12	14	3	####
Grand Total		162	6	9	12	20	18	24	18	18	####

Mean back-calculated lengths at annulus formation by age class and cohort - 1997

SPECIES

Brook Trout

Location	Cohort	Number	0	1	2	3	4	5	6	7	8
ALDER	1997	3	58	####	####	####	####	####	####	####	####
	1996	5	####	69	####	####	####	####	####	####	####
	1995	16	####	58	104	####	####	####	####	####	####
	1994	10	####	65	107	143	####	####	####	####	####
	1993	4	####	63	102	133	167	####	####	####	####
	1992	3	####	73	128	183	244	299	####	####	####
ALDER Total		41	58	63	107	148	200	299	####	####	####
BENEWAH	1996	1	####	60	####	####	####	####	####	####	####
	1995	4	####	55	90	####	####	####	####	####	####
	1994	2	####	80	117	148	####	####	####	####	####
	1993	2	####	94	142	190	224	####	####	####	####
	1992	1	####	96	163	230	313	347	####	####	####
BENEWAH Total		10	####	72	115	181	254	347	####	####	####
Grand Total		51	58	65	109	155	216	311	####	####	####

Standard deviation of mean back-calculated lengths at annulus formation - 1997

SPECIES

Brook Trout

Location	Cohort	Number	0	1	2	3	4	5	6	7	8
ALDER	1997	3	7	####	####	####	####	####	####	####	####
	1996	5	####	3	####	####	####	####	####	####	####
	1995	16	####	17	22	####	####	####	####	####	####
	1994	10	####	10	20	30	####	####	####	####	####
	1993	4	####	6	19	28	48	####	####	####	####
	1992	3	####	7	14	13	18	22	####	####	####
ALDER Total		41	7	13	21	31	55	22	####	####	####
BENEWAH	1996	1	####	####	####	####	####	####	####	####	####
	1995	4	####	4	17	####	####	####	####	####	####
	1994	2	####	5	10	2	####	####	####	####	####
	1993	2	####	1	8	15	3	####	####	####	####
	1992	1	####	####	####	####	####	####	####	####	####
BENEWAH Total		10	####	19	30	35	51	####	####	####	####
Grand Total		51	7	15	23	34	57	30	####	####	####